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*Illustrated.

The story of the way in which the steam railways of Chicago came to the rescue of its people in their time of need during the recent strike on the traction system of that city, is told elsewhere in this issue. It is a remarkable narrative, disclosing a reserve of public spirit and efficiency possessed by the managements of the railways, whose existence the public of Chicago never fully appreciated before. The elevated and surface street car lines, which handle millions of urban and suburban passengers daily, were all suddenly forced to suspend operations. Within a single night the suburban business of the steam railways leaped from 125,000 to 625,000 people daily, an increase of 400 per cent. A growth of business which would have been large for a period of 10 years took place in 10 hours. And yet without any of the large increases in facilities and in employees which would have been made to handle this largely increased business if its growth had come normally, the railways dealt with it with hardly any more discomfort to their patrons than is often experienced during the rush hours on many urban and suburban lines, and without a single accident. On the streets all kinds of means of transportation were being operated at whatever rates those who ran them could extort from those using them. On the other hand, the steam railways carried the business at their regular rates, and in many cases for nothing because of the impossibility of collecting all the tickets and fares on the crowded trains. Never did the managements of the steam railways of this country show greater capacity for dealing effectively with a trying and difficult situation. The ignorant braying of blatherskites regarding "inefficiency" becomes ridiculous when confronted with the record of such an achievement. The recollection of the service rendered to them during this time by the steam railways ought to be, and probably will be, long held in grateful appreciation by the people of Chicago.

A Signal Service to the People of Chicago

"Safety First" has been amplified by Mr. McCrea, general manager of the Long Island, into "Safety First, Last and Always." This is a good idea. Mr. Richards, in preaching safety-first, has always implied, if he has not distinctly said, "Celerity Second"; but it is well to remind ourselves that the existence of the second postulate does not detract from the importance of the first one. "Safety-first" is a half truth; and the automobile fiends of Long Island cannot be subdued by anything less than whole truths and in heroic doses. "Safety first, with a margin," would be another useful variation. In a lawsuit recently tried on Long Island, concerning an automobile accident, in which two rich men were killed, the lawyers laid great stress on the fact (or the claim) that the passenger train, of seven cars, which wrecked the automobile (about midnight), was unlighted, except in the three rear cars; the persons approaching the crossing were deceived as to the nearness of the approaching train. In other words, believing that they had, say, two or three hundred feet leeway, they were justified in crossing the track ahead of a rapidly advancing train! It is not to be supposed that such vicious reasoning will affect even an anti-railroad jury; but in trial by newspaper it is, probably, not without its value. Failure to allow a little margin—to be a little more than safe—is the cause of half our troubles.

Be a Little More Than Safe

For many years the railroads have been kicking about too much regulation. Of late we have heard some complaints of this nature from men engaged in other lines of business. Some shippers have been heard to criticize certain acts of the Interstate Commerce Commission as being regulation of the shipper instead of the railroad. We have recently received from the secretary of state of New Mexico a pamphlet list of titles of bills enacted by the legislature of that state, which includes the following: "An act requiring railroads operating in New Mexico to compel locomotives transporting trains to use headlights." What dire penalty is to be imposed on the refractory, or perhaps, unrefractory locomotive, for violation of the act, is not stated. And now the dear public, in whose name and often without whose knowledge all of these regulations and restrictions have been enacted, are required by the Cummins law, as interpreted by the Interstate Commerce Commission, to sign a statement of the value of baggage offered for free transportation. No one ever heard of any difficulty being experienced by a passenger in making an affidavit as to the intrinsic or sentimental worth of any bag-

Who Is Being Regulated Now

gage that happened to meet the fate for which some trunks are predestined. But now that the statement is required in advance, if only to the effect that the value does not exceed $100, or if a charge of 10 cents is made for insurance in case the baggage happens to consist of something more than a few old clothes, Vox Pop and Pro Bono Publico begin to unlimber their heavy artillery. Many people ascribe this new regulation to a fiendish desire on the part of railroad officials to multiply red tape. They do not know that it represents simply an unexpected effect of another law intended to tie the hands of the railroads, and that while in some respects it may result beneficially to the roads, in others it adds to their troubles as well as causing some inconvenience to the public. Most of those who are "peeved" by this law have never given a thought to the fact that the railroads are continually harassed and put to unnecessary expense by numberless ill-advised laws which usually do not affect and have seldom come to the knowledge of the traveling public. It all depends on who is made the goat.

VETO OF PENNSYLVANIA EXTRA CREW REPEAL BILL

THAT large majority of the people of the United States who do not belong to labor unions should ponder the significance of the action of Governor Brumbaugh of Pennsylvania in vetoing the bill to repeal the extra crew law in that state. The railways carried on an extensive and vigorous advertising and publicity campaign to get this law repealed. They demonstrated that it increased railway expenses and did not increase railway safety. The proof was so complete that public sentiment favored the law's repeal, and both houses of the legislature acted accordingly. The labor unions all over the United States supported the railway brotherhoods in bringing to bear on Governor Brumbaugh a powerful pressure for the retention of the train crew law. Their influence proved more potent than the public sentiment of Pennsylvania. After a delay of several weeks Governor Brumbaugh has vetoed the repeal bill.

The governor in his veto message expresses the view that the extra man in a train crew promotes safety. If he really believes this he writes himself down an ass. He adds that if the railway companies can demonstrate to him within the next two years that the law is not fair it will be the duty of all officials to do justly by them. There is one public official of Pennsylvania to whom it will be impossible to demonstrate this. That is the present governor. He has shown that he is one of that common garden variety of American politicians with whom facts and arguments do not count and with whom nothing has any weight except the votes that they hope to get. To all appearances organized labor convinced him that the extra crew law was a good thing by impressing on his mind the notion that organized labor controls a great many votes.

If organized labor can exercise such an unwholesome influence over legislation affecting railways it will be only a matter of time until it will be exerting a similar influence over legislation affecting other industries. Indeed, its activities in regard to railway legislation already are indirectly affecting other industries. Every law affecting railways that labor gets passed increases railway expenses and thereby tends to increase the rates which the farmers, the manufacturers, the merchants and the other business men of the country must pay. Governor Brumbaugh's veto message was a move to maintain and increase the rates which the people of Pennsylvania must pay for transportation.

Inasmuch as the business interests of the country are so vitally affected by the legislation affecting railways and other classes of concerns which is being promoted by organized labor, it is plain that the time has come for all classes of business interests to organize to do battle with the labor lobby. The strength of union labor in dealing with spineless politicians of the Brumbaugh type results from the fact that it is organized. If the farmers, the merchants, the manufacturers and the other business men of the country do not want organized labor to get a strangle hold on the governments, of the nation and all of the states which it will be almost impossible to break the business interests must organize.

There is another lesson of great importance in this Pennsylvania incident. This is that it is easier, as well as better to keep bad laws off the statute books than it is to remove them after they have been passed. While the railways of Pennsylvania were fighting for the repeal of the extra crew law the railways of Illinois were fighting to prevent the passage of a train limit law. The two campaigns were carried on with equal success, so far as public opinion and the legislatures were concerned. In Pennsylvania the legislature passed a bill to repeal the extra crew law. In Illinois the legislature refused to pass the bill to limit the length of trains. But the ultimate results are entirely different, because in Pennsylvania the railways continue to be burdened by an unreasonable statute, while in Illinois the railways entirely escaped the burden sought to be imposed upon them.

It does not seem impracticable for the railways to enlist the business men of the country in a contest with organized labor to stop the passage of all these vicious and expensive measures for the regulation of railways. In Illinois the roads were energetically supported by the Illinois Manufacturers' Association and other organizations of business men. What is more needed than all, however, is that in some way all those who are being adversely affected by foolish and vicious labor legislation should unite to fight it to the bitter end, and to put out of public life once and for all, men of the Brumbaugh type, whose servility to union labor has become a public menace. Union labor constitutes a comparatively small minority of the people of the United States, but it is showing a power altogether disproportionate to its numbers. This was illustrated by the passage of the law at the last session of Congress to relieve labor unions of the operation of the Sherman anti-trust law. It is again illustrated by Governor Brumbaugh's cowardly veto of the Pennsylvania extra crew repeal bill. Unless the business interests of the country soon bestir themselves we shall soon have a government of, for and by the labor unions. The labor lobbyist is rapidly supplanting the political boss as the arbiter of our destinies.

NEW BOOKS

University of Illinois Bulletins. Bound in paper, 5½ in. by 9 in. Published by the University of Illinois Experiment Station, Urbana, Ill.

This is volume ten of the bulletin issued by the Engineering Experiment Station of the University of Illinois, most of which are noticed from time to time in these columns. This volume contains bulletins 68 to 74 inclusive, the subject of No. 68 being The Strength of I-Beams in Flexure, while that of No. 69 is Coal Washing in Illinois, No. 70 the Mortar Making Qualities of Illinois Sand. No. 71 Tests of Bond Between Concrete and Steel, No. 72 Magnetic and Other Properties of Electrolytic Iron Melted in Vacuo, No. 73 Acoustics of Auditoriums and No. 74 The Tractive Resistance of a 28-Ton Electric Car.

Records of Railway Interests in the War. Published by the Railway News, London. 88 pages, 8 in. by 13 in. Illustrated. Price one shilling.

The Railway News has published in book form a series of interesting articles reprinted from its regular issues describing the part that the British railways have taken and are taking in the great European war. This is a part of a series devoted to the railways of various countries. Among the articles are illustrated descriptions of ambulance trains for service on the continent, articles showing the number of employees of the various railways that have enlisted, the arrangements made by the railway companies for filling the places of their employees who have gone to war, and for the care of their families during their absence. Other articles describe various ways in which the railways have been affected by the war and statements are given showing the effects of the war on their business and revenues.

Letters to the Editor

PREMIUMS FOR FREIGHT TRAIN SPEED

PITTSBURGH, Pa.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I see by your issue of May 7 that W. T. Lechlider, superintendent of the Cleveland division of the Baltimore & Ohio, is giving freight trainmen special credit for making good time, using those credits to offset demerits and thus clear up a man's record.

This announcement suggests a number of very interesting questions. How about personal records that do not need "clearing up"? Why not let good men make their records still better? Why has the world waited so long to see this idea of merits tried? And why should there not be something more substantial than a book entry? Are "line and surface," "condition of frogs" and the elegance of the shoulder of the roadbed to remain forever in the future (as they have been in the past) the only features of railroading in which excellent work can be rewarded by something beyond and above the figures on the payroll? Progressive superintendents have proposed premiums for trainmen—actual, substantial money premiums—long since; how is it that such enterprising men do not get more attention from higher officers? Does the old notion that it is dangerous to encourage freight men to run faster than 15 miles an hour still have a good deal of influence?

When the 16-hour rule first went into effect a bunch of crews on a certain Eastern road, who had been averaging 18 hours, on a run of about 130 miles, at once adjusted themselves to the new rule. They shortened their time 11 per cent., with no trouble at all. Are the brotherhoods forever to go on working to make train-time slow, and no improvement be made in the process or instrumentalities which should tend to make it fast?

H. S. M.

THE FLAGMAN

HAILEYVILLE, Okla.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The article on "the new flagman" by Mr. Daniels in the Railroad Herald, which appeared in the *Railway Age Gazette* of May 7, touches a subject on which there has been an extensive amount of discussion.

The first thing to be considered is the kind of man to employ in train service. Too much care cannot be exercised in that direction, for the reason that a man of good qualities will eventually work himself into a more important position. If he is not ambitious he is not a fit subject for employment in any capacity. That a flagman has learned the road and has passed a satisfactory examination on the book and timetable is not enough to justify putting him out to protect a passenger train, unless he has had previous experience on other roads.

Would it be advisable to put a new man out to look after the rear of a heavily loaded passenger train? Has the conductor, who will, no doubt, be busy with transportation and looking out for his train orders, time, or will he take time to see that the flagman goes back far enough and that he understands when to come in, and how to use the flagging appliances?

No man should be sent out to protect a passenger train, or any other train for that matter, who has not had some practical experience on the road on freight trains; and, more than that, an experience long enough to have taught him thoroughly the importance of flagging. The new brakeman generally wants to go to work on the rear end, and the old heads generally want the head end. This is not the place for the new man to start; he should be put on the head end and given six months or a year there, before putting him on the rear.

It is true that some of the most serious collisions have occurred while old and experienced men were flagging; but this does not weaken my argument. There has been more or less leniency shown to flagmen, as well as others. Leniency is good, but it should not be indulged in too far. It is generally conceded that the matter of flagging is not given sufficient attention. To prove it, all one has to do is to make a trip over almost any railroad and ride on the rear end and notice the performance of the flagmen. There are officers, in different capacities, going over the road every day and surely some of them see this indifference on the part of the flagmen. If you mention it to them the answer, very likely, will be, "Oh, I hate to turn in the boys; you know it's not in my department," and so on. Just let them read of a serious collision, and see how soon they will condemn the man who was responsible; while, no doubt, they have seen the same thing on their own road, time and time again, and have failed to report it to the proper officer. Who is to blame?

A man, to do a job of flagging and do it properly and safely, must understand its importance above all things. If he is allowed to go on from day to day only half doing it, but a short time will elapse until something serious will occur, and then the individual man will be held responsible, while there are others, not called to account, who are equally responsible. It is the duty of every railroad employee, regardless of his position, to make a report to the proper officer of flagmen's negligence, wherever observed. The officer in charge is then responsible for dealing with the man who has violated the rules. With all classes thus recognizing their duty there will be better flagging all over the country.

J. L. Coss.

FACTOR OF ADHESION

SCRANTON, Pa.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I read the original communication on the above subject by "Mechanical Engineer," and noted the later comments thereon appearing in your issue of May 7, 1915.

It seems to me that Mr. Givin has more or less side-stepped the subject, to discuss the comparative merits of various wheel arrangements. Incidentally I agree with much that he has to say. For instance, it seems to me that many roads are following the prevailing fashion in wheel arrangements for no better reason than to be considered up-to-date. Any time given to a study of their peculiar traction problems, will, in such cases, be time well spent.

The question of selecting a factor of adhesion is, beyond doubt, of very considerable importance, but, like most problems, is best worked out by individual systems. The final result, in such an event, is much more likely to be satisfactory. This result is almost sure to be the outcome of compromise. So many factors should influence a decision that only with full knowledge of conditions of topography, traffic, equipment, schedule, shop facilities, as well as financial status and general policy, can a well balanced judgment be rendered. To illustrate, a big and wealthy road, secure in possession of heavy through traffic, on high class right of way, may standardize its power to meet the varying conditions of each division. This might mean quite widely divergent types, with, among other things, extreme conditions in factor of adhesion, each type giving the best results in its own territory or service.

A less fortunate road embodying the same conditions, but with thinner traffic, fewer engines, poorer road bed and less capital, might find it advantageous to concentrate on one or two standard types of power for the sake of reducing maintenance charges. This would result in an average engine that developed its full efficiency only over certain divisions or during certain parts of a run.

Here is another concrete case. There are two high class roads running passenger trains out of New York City, and both ar-

rive at the same goal, but by different routes. The first is a straight line but mountainous, the second more circuitous but fairly level. The first road has developed a satisfactory locomotive, with comparatively small wheels and a high factor of adhesion, which gets there. On the second the wheels are high and the factor of adhesion low, or comparatively so. Both are right. To make the schedules on the level road, the small wheeled power would show an unnecessarily high cost of maintenance, while the power with the high wheels and low factor of adhesion would never in the world make running time on the hills.

Slow freight service is best served by a good high factor of adhesion. This is a matter entirely independent of type or wheel arrangement, and becomes increasingly desirable in mountainous regions. The same is true of passenger locomotives operated in the same districts, especially if the stops are frequent.

With multiple cylinders, equal results could be obtained with a lower factor, or superior traction with the same adhesion. Today 20 miles per hour for slow freight is considered the maximum economical speed, while 25 miles per hour up a 1½ per cent gradient, with eight modern steel coaches is also good time for passenger trains. With usual proportions, under normal weather conditions, and at speeds not exceeding those mentioned above, it requires a factor of adhesion approaching five to satisfactorily absorb the tractive effort.

Therefore, I conclude with some reservations, that a high factor of adhesion is desirable, except under special conditions. Some of these are: sustained high speed, approximately level country and a sufficient demand for such high speed service to keep a considerable group of power in continuous operation. This last condition predicates a railroad doing a large through passenger and fast freight business.

Gordon Baxter,
Delaware, Lackawanna & Western, Scranton, Pa.

WHY COST OF OPERATION HAS DECREASED ON THE FRISCO

Springfield, Mo.

To the Editor of the Railway Age Gazette:

By taking their employees into their confidence, the officials of the St. Louis & San Francisco are obtaining wonderful results in more economical and efficient operation. The novel and heretofore unheard of proposition of the official and employee meeting in common to discuss economical operation is an innovation adopted by the latter-day officials of the Frisco; to date the results obtained are almost unbelievable. These results were not accomplished by "absent treatment," but by the laying on of hands: friendly hands that gave the grip of encouragement.

The first educational meetings were in connection with the safety first movement; these were followed by other get-together meetings, and then came the freight claim preventive movement which was described in recent issues of your journal and which promises to show a saving of $200,000 for the fiscal year. This saving would not have been possible had it not been for the responsiveness of the men and the educational features developed by the use of the freight claim preventive postal cards,* calling the officials' attention to various causes of claims that would only have to be known to them to be eliminated. These cards were sent in with the distinct understanding from the general manager that no discipline would be applied to the party at fault. By this understanding and assurance the men did not feel that they were being made "snitches" or "spotters" against each other, and the fact that the company lived up strictly to its promise inspired the men to more confidence in the officers. Today, the employee does not fear or hesitate to send in cards to his superior, calling his attention to something that should not be; and at the same time he does not feel that he is snitching on his fellow workman.

*See *Railway Age Gazette*, April 16, 1915, page 818.

At meetings of the freight claim preventive committees the proposition of ventilation and refrigeration of cars was put plainly and forcibly before the men; facts were analyzed and the men brought to realize from a dollar standpoint what improper ventilation or refrigeration meant to the company. A card was posted in each caboose, showing at just what temperature certain commodities would freeze. Instructions as to ventilation were constantly before the men on duty. The men feel that the Frisco interests are their interests. A damage to freight handled under ventilation and refrigeration can by improper care run into dollars quicker than almost any other commodity transported by freight. The men know this, and feeling toward the company as they do, claims on this character of freight were far less this winter than ever before, and during the strawberry and peach handling this summer our percentage of loss through mishandling I am sure will be the lowest ever.

A contented man is generally a courteous man, and a courteous man makes friends, and friends and good service means increased business. Therefore 25,000 contented Frisco employees means increased revenue.

That the men appreciate the treatment accorded them can be best illustrated by their action in coming to the company's assistance to obtain increased freight and passenger rates at the hands of the law makers of the various states in which the Frisco operates. Our efforts along this line were not barren of success, for in no state where the Frisco operates was a line of adverse legislation passed. In our effort to assist the company in getting an increase of rates, personal interviews in many cases were necessary with the voters that their expression of sentiments on the subject could be called to the attention of their senator and representative. To obtain these interviews, it was necessary in many cases to endure hardships; but we did not have a passenger conductor, brakeman, fireman, engineer or a man on freight, or in the shops, or offices, or on the section who hesitated one moment to drive or walk through rain and snow that he might render assistance to the company to gain for it the increased revenue. Loyalty to the railroad by its employees can only be brought about in one way, and the Frisco officials have adopted that one way.

We are being educated as to the cost of material used and handled by us, and it will not be long before the men as a whole will know the value of the goods they are handling. Knowing the cost of material used will in a great many cases decrease the amount used. A child is destructive because of lack of knowledge, and seniority and organization has kept in the employ on many a railroad men of the children's minds. If it is necessary for us to keep them let us educate them. Educate the man so he will take pride in his work, for a man who prides himself on his work is ashamed to do a poor job, and a man who is ashamed to violate the rules does not violate them. At present too much of the green trainman's education and training is left largely with the crew he happens to be with. Start them right, teach them right and they will do right.

It will only be a short time when railroads will have bureaus of employment and instruction. In the employment of men keep in mind moral character, moral stamina, and remember that high ideals are as necessary and valuable on a railroad as in any other walk of life. And, also, that it is better to put iron in a man's courage than tears in his eyes, and that personal interest means more contentment which in turn produces better work, therefore increased efficiency and more profits.

F. D. Wrightsman,
Conductor.

The Simplon Tunnel of Switzerland.—On the second Simplon tunnel, 12 miles in length, with a maximum grade of .7 per cent, 46.2 per cent of the total length has now been fully excavated on the south and north side together. During February last 6,850 cu. ft. were excavated and 4,250 cu. ft. lined with masonry on the south side. Altogether 44.4 per cent of the tunnel is now complete.

Nineteen Years' Development Work on the Santa Fe

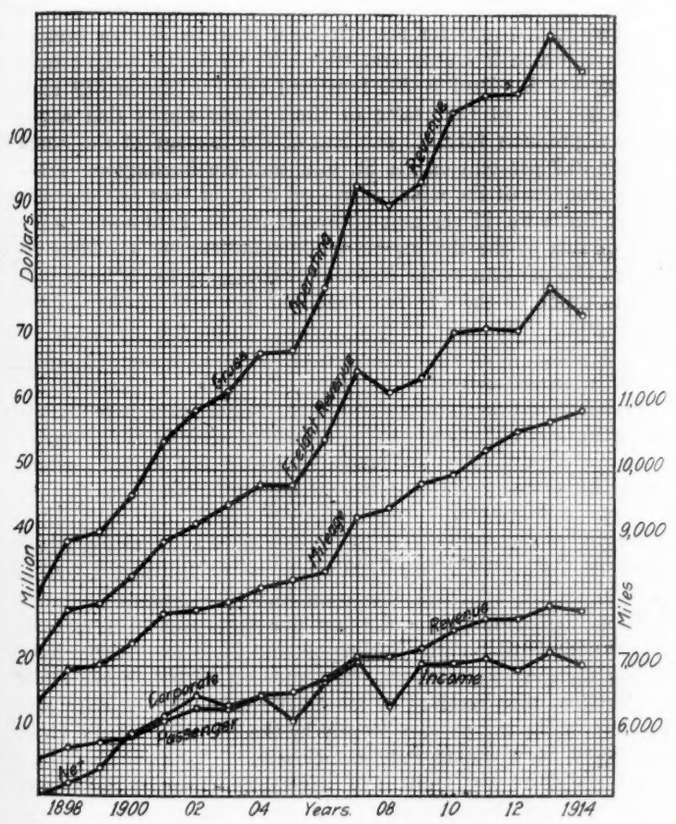
Part 2—A Description of the Various Methods Used to Build Up the Traffic and to Handle It Economically

This, the second of two articles, describes the methods by which freight and passenger traffic have been developed, the methods of operation, relations with employees and the financial results secured. The first article, which appeared in last week's issue, described the causes leading to the receivership, the condition of the property at the time of the reorganization and the policies governing expenditures for the building of extensions and for the maintenance of the property.

FREIGHT TRAFFIC

The gross operating revenues of the Santa Fe for the fiscal year previous to the reorganization were $28,814,853, or $4,446 per mile of line. Last year they had increased to $111,109,770 or $10,186 per mile of line. Thus, in this period the revenues had increased 350 per cent, while the use of the property per unit of length had more than doubled.

Referring to freight traffic only, for the fiscal year immediately preceding the reorganization the business aggregated



Relative Increases in Freight and Passenger Revenues, Corporate Income and Mileage of the Santa Fe Since 1897

1,673,407,050 ton miles, earning $19,561,659. Last year it amounted to 7,316,271,630 ton miles, earning $73,638,388. In other words the traffic increased 337 per cent in this period, while the revenue increased 276 per cent. The increase in traffic in the entire Western district in which all of the Santa Fe System is located, as reported by the Interstate Commerce Commission for the fiscal years 1896 and 1913 (the figures for 1914 not being available, but being less than those for 1913), is 276 per cent, while the revenue increased 200 per cent. Thus the traffic on the Santa Fe has increased over 20 per cent faster than the average for all the roads in this territory.

One of the principal purposes of the Strong administration in laying out the lines of the system was the development of a diversified business. The result is shown in an interesting manner by the present classification of the traffic. Fruits from California comprise 5 per cent of the total tonnage, grain from the middle west 6 per cent, livestock and products of animals from the same territory 6 per cent, ore and bullion from New Mexico 12 per cent, manufactured products mainly from Kansas City and Points east, 16 per cent, etc. This leads to relatively small fluctuations in traffic, and partially accounts for the fact that the Santa Fe is now showing an increase in business, while other roads, particularly in the east, show heavy decreases.

From a traffic standpoint the Gulf lines bear an interesting relation to the rest of the system. While originating considerable grain, cotton, lumber and other traffic, practically all of it goes to Galveston and other ports, and with the exception of lumber and a small amount of vegetables during certain seasons, the Gulf lines deliver practically no business to the remainder of the system. On the other hand, the parent lines deliver a large amount of business to the Gulf lines, including merchandise, wheat and export products.

The Santa Fe has shown itself a very strong competitor for traffic wherever it has gone. For example, 57 per cent of the total output of citrus fruits of southern California is loaded on Santa Fe tracks and 48 per cent of it is brought east by this road. This traffic alone amounted to over 20,000 cars for the Santa Fe last year. It also brought east over 2,000 cars of green fruit from the San Joaquin valley, over 2,000 cars of cantaloupes from the Rocky Ford, Colo., district and over 700 cars of apples and other fruit from Canyon City, Colo. It secures almost an equally large proportion of the wheat traffic from Kansas, while nearly one-half of all the livestock entering Kansas City is brought in by this road.

Such traffic is secured and held today primarily by service, for a road has no other inducement to offer. The high standards of maintenance of way and equipment enable the Santa Fe to give a high grade of service. Aside from regularity of operation, courteous treatment of shippers and other elements of service which are to be expected from every road, numerous special methods have been adopted to aid in securing traffic. One method which has assisted materially is that of furnishing consignees advance information regarding the arrival of shipments. This has meant the development of a complete and accurate system of car records and reports. As soon as freight is loaded at Chicago, Kansas City and other important terminals, duplicate copies of the waybills are prepared showing all information except weights and charges. These waybills are sent by United States mail to the agents at the various destinations. Ordinarily deliveries of time freight from Chicago are made at Denver on the fourth morning and at San Francisco on the tenth morning following loading.

In common with the practices on a number of other roads, passing reports are made out as the trains leave each important terminal. The special feature of the Santa Fe system consists in sending copies of these passing reports not only to the superintendent of transportation, but also to the agents at all important traffic points for which these shipments are billed. Receiving the waybills in advance of the shipments the agent at destination can ascertain the car number in which any shipment is loaded. The passing reports give him the location of the cars at any time. In this way he is able to inform a shipper when any shipment will reach him and the consignee can plan accordingly. It has been found that while the average patron desires prompt service he is more interested in securing regu-

larity of service and knowing when he may receive any definite shipment and the road which can give him this has a preferred claim on his business.

As a definite illustration of the value of such service and of the care with which it is being followed out in the regular routine, it recently became highly desirable to locate a shipment originating in Connecticut and turned over to the Santa Fe at Chicago by another road. The inquirer had only the date the shipment left the eastern factory, but in spite of the fact that the connecting line was unable to ascertain if the shipment had yet reached Chicago, within three hours it was located in a train west of Dodge City, Kan.

Another practice which has been found profitable from a traffic standpoint is that of the higher executive and operating officers making special trips over the lines with the traffic officers as often as opportunity permits, stopping for a few minutes at the various towns along the line and meeting the shippers. Many such trips have been made, and the personal contact of these officers with the present and prospective patrons has created a very friendly attitude which has been reflected in the traffic. One of the most recent trips was made over the Superior branch, late last fall, by the president, the vice-presidents, the general manager and the local officers. Similar visits are also made by the executive and operating officers to various towns on the occasion of the opening of new stations, etc. Also, the publicity agent devotes a large part of his time to calling on the patrons along the line, informing them of new improvements being made, additions to the service, etc.

From 8 to 10 demonstration trains of various kinds are operated annually through the agricultural territory in the central western states. One of the most recent was a general farming special, which was run through the state of Arizona in December, in conjunction with instructors from the state university.

PASSENGER TRAFFIC

The passenger traffic has shown as great an increase as the freight traffic. In the year preceding the reorganization the passenger revenue was $5,896,765, while last year it reached the total of $28,497,233, an increase of 383 per cent. Here, as with the freight traffic, the Santa Fe is a strong competitor, as is shown by the fact that it secures 51 per cent of the entire passenger business in and out of Kansas City, while in spite of the fact that it is the long line, it gets a very considerable portion of the business from Chicago and Kansas City to Denver. While it reaches nearly all of the important cities of the southwest, it traverses long stretches of practically unsettled country in western Texas and west of Albuquerque. Its passenger revenue per mile of road for 1914 of $2,600 is therefore high, comparing with $2,382 for the Burlington and $1,958 for the St. Paul. A considerable portion of this traffic is transcontinental business between Chicago, Kansas City and southern California, as is shown by the fact that the average length of haul per passenger is 87.5 miles, as compared with 55.5 miles for the St. Paul and 49.1 miles for the Burlington. The development of this transcontinental traffic is indicated by the fact that the average length of haul per passenger in 1896 was 68.2 miles. Five daily trains are run from Chicago to southern California throughout the year, in addition to a weekly excess fare train during the winter. The California Limited has been run in as many as eight sections this winter.

One strong asset of the passenger department which is unique on the Santa Fe is the Harvey hotel and dining car system. This company, which has a close working arrangement with the Santa Fe, operates a chain of 16 hotels at various important terminals west of Kansas City, in addition to 35 dining and lunch rooms. It also operates the Santa Fe's dining cars. The popularity of the dining rooms and hotels is such that only one train running west of Kansas City carries a dining car, all others stopping for meals at these various dining rooms. Because of the high standards of service maintained, this is an asset rather than a disadvantage in the solicitation of traffic and is instrumental in securing a considerable amount of passenger business. Another strong asset of the passenger department in soliciting transcontinental business is the location of the Grand Canyon of Arizona on its lines.

OPERATION

Having outlined the manner in which the property has been extended and improved and the traffic developed, it will be instructive to note briefly some of the details of its operation by which the net returns have been changed from a deficit of $4,433,380 in 1895 to a net corporate income of $20,183,965 last year. The operation of the property is in charge of a vice-president with supervision over the entire system, the largest mileage in this country under the direct charge of one man. The system is then subdivided into four grand divisions, the Eastern, the Western, the Gulf and the Coast Lines, with limits at Newton, Kan., Purcell, Okla., Sweetwater, Tex., and Albuquerque, N. Mex. Each grand division is in charge of a general manager, who is given broad authority to handle matters within his territory, and who has a complete staff of engineering, mechanical and operating officers assisting him.

One commonly accepted index of the efficiency with which a road is operated is the revenue freight train load. This has been increased from 115 tons for the six months ending June 30, 1896, to 364 tons for the last fiscal year, or 216 per cent in 18 years, which is highly creditable. The revenue freight train load of the St. Paul is 380 tons and the Burlington 479 tons. A comparison of the traffic of these roads shows that argricultural products form 20 per cent of the tonnage of the Santa Fe and 21.7 per cent on the St. Paul and the Burlington. Likewise, products of the mines furnished 37.3 per cent of the traffic of the Santa Fe, 25 per cent of that of the St. Paul and 40.9 per cent of that of the Burlington, while manufactured products afforded 17.6 per cent of the business of the Santa Fe, 17.5 per cent of the traffic of the St. Paul, and 15.5 per cent of that of the Burlington. Thus, in this general comparison the traffic on the three roads is quite similar and does not account for the differences in the train load.

However, the average revenue per freight train mile on the Santa Fe was $3.55 last year as compared with $3.07 on the St. Paul and $3.50 on the Burlington, indicating that there is probably a difference in the character of the traffic not shown by the general classification. This is further shown by the average revenue per ton, which was 1.007 cents on the Santa Fe, 0.8078 cents on the St. Paul and 0.729 cents on the Burlington. Also, in spite of the relatively low train load, the average operating ratio of the Santa Fe for the past five years was 66.22 as compared with 68.54 on the Burlington and 70.15 on the St. Paul. While the average rates may be somewhat higher in the Santa Fe territory than received by the other roads, this low train load is found to be caused very largely by the character of the traffic handled when it is analyzed more closely.

As stated above, fruits and vegetables comprise practically 6 per cent of the tonnage of the Santa Fe. The larger part of this traffic originates in California and is hauled to Kansas City or Chicago. Since the average haul on all traffic on the system last year was 292 miles, this fruit and vegetable traffic furnished much more than 6 per cent of the business, measured in ton-miles, and its influence on the train loading was therefore correspondingly greater. A heavy l. c. l. movement westbound to Denver and the Pacific coast also tends toward the same result. Even east of Kansas City over 75 per cent of the freight handled is time freight. West of Albuquerque so large a proportion of the traffic is of this character that frequently there is not enough dead freight to fill trains out to the time freight tonnage rating.

This expedited traffic requires rapid handling and a schedule of 8 days is maintained from Los Angeles to Chicago. The character of much of this traffic also prevents holding it at a terminal for several hours until trains can be filled out to economical

tonnage. The relatively heavy grades west of Albuquerque, over which all transcontinental freight must be hauled, and those between Albuquerque and Trinidad over which the heavy ore traffic and other business between Colorado and New Mexico points must be moved, also reduce the train loading on these districts.

Another factor tending to decrease the train loading is the necessity of running pick-up trains on the originating districts in the fruit country without regard to tonnage to save delay to this fruit. This traffic is brought into Bakersfield from the San Joaquin Valley and into San Bernardino from southern California, where it is consolidated into full trains for movement to Kansas City and Chicago. In some instances trains from the two districts are further consolidated at Barstow to give the fruit preferred movement. The fruit traffic moves most heavily during the winter months, and frequently 200 cars are forwarded from San Bernardino daily during the height of the season. However, the late summer movement is increasing from year to year, and this business now rarely falls below two train loads daily, even during the summer. An equally important condition tending towards low train loads is the large proportion of branch line mileage on which daily train service must be given, whether full tonnage is available or not. In view of these conditions adverse to heavy train loading, the revenue train load of the Santa Fe makes a very favorable comparison with that of the other western roads.

Another problem with which the operating department is confronted is the reduction of empty car mileage because of the lack of balance of the traffic. While much westbound l. c. l. and other business is loaded into refrigerator cars, it is still necessary to haul many such cars empty westbound. In the same way there is very little return loading for box cars eastbound, although it is hoped that this latter condition will be materially improved when the lumber begins to move eastbound from the country along the recently completed Northwestern Pacific lines north of San Francisco. In spite of these unfavorable conditions, 70 per cent of the revenue freight car mileage is loaded, as compared with 68 per cent on the Burlington and 74 per cent on the St. Paul.

Because of the large proportion of time freight handled, a relatively high average mileage per car per day is to be expected. For October, 1914, this figure was 33.6 miles, while it averages about 23 miles for the entire country. Because of the character of the traffic, special attention is also directed to this subject. The method of keeping track of cars in transit has been referred to previously. Another means adopted to keep cars moving is a 12-hour delay report on which is shown all cars of time or dead freight detained at any point over 12 hours. Special attention is then given these delayed cars until they are again started moving.

Contrary to general practice, the agents at the important terminals on the Santa Fe are given charge of all operations at those points. This practice exists at all terminals, except Pueblo, La Junta and Denver, and the agent has charge of yard operations, as well as traffic matters, being practically a superintendent of terminals. The combination of all duties in one officer in this way has worked out very satisfactorily.

One of the subjects which have been given a great deal of attention by the operating officers of the Santa Fe is that of the reduction of loss and damage claims. When the campaign on this subject was started five years ago, 1.6 per cent of the freight revenue went for the payment of these claims, and this was as low as the average for other roads operating in this territory. In spite of the fact that these claims have shown a distinct tendency to increase on most roads recently, the campaign conducted on the Santa Fe has resulted in a reduction in them on this road of 25 per cent. For the last six months of 1914 the proportion of freight revenues returned in payment for damage claims was reduced to the unusually low figure of 0.83 per cent. The campaign has been conducted under the supervision of a system loss and damage committee. Semi-annual meetings are held at which the sole topic for discussion by the operating and traffic officers is methods for the reduction of such claims. Similar meetings are also held on the grand divisions and on the local divisions. At the latter meetings it is common to invite certain locomotive engineers and conductors to attend. This method was described in detail in the *Railway Age Gazette* of August 7, 1914, so we will not refer further to it here.

RELATIONS WITH EMPLOYEES

Another policy of the present management has been the promotion of cordial relations with the employees. One important factor to this end has been the fixed practice of making all official appointments from among men already in the service of the road. When Mr. Ripley was given charge of the property he brought only three or four men with him, and since that time all positions have been filled by promotion from the ranks. While applications for positions are continually being received from men on other roads, the invariable reply is that the only way to secure those positions is to enter the ranks and take chances with other employees.

Retaining the proper class of employees has been a problem on all the roads operating in the southwest. For this reason, the Santa Fe has given special attention to the development of a system of reading rooms at nearly all the division points over the system, and about 25 different terminals are now equipped in this way. One man has supervision of these various reading rooms, with a separate manager in direct charge at each point. They are equipped with reading rooms, dormitories, bowling alleys, baths, etc. Various glee clubs and other entertainers present programs from time to time. Nominal charges are made for beds and for the use of the billiard tables and bowling alleys, but all other facilities are free to employees. The railroad company provides the buildings and their maintenance and operation, spending nearly $90,000 on this last year. It also co-operates in the support of three railroad Y. M. C. A.'s at places not provided with reading rooms.

A pension system similar to that of several other roads has been in force since 1907, with provision for a minimum monthly payment of $20 and a maximum of $75. On June 30, last, 346 employees were carried on this roll. Three separate hospital associations are maintained by contributions from employees, one on the Eastern and Western lines, one on the Gulf lines and the third on the Coast lines, and company hospitals are located at ten important terminals.

While not by any means confined to the Santa Fe, this road has been a strong advocate of apprentice courses in the mechanical department, adopting the system now in effect for machinist apprentices in 1908. This course covers four years. On November 30, 1914, 549 machinist apprentices were enrolled, while 865 apprentices had been graduated up to that date. A $12,000-building was completed at Shopton (Ft. Madison), Iowa, last year, with class rooms, laboratories, baths, etc., for the use of the apprentice students. A similar course lasting three years has recently been started for carpenter apprentices in the car department at Topeka and Shopton, while it is now planned to inaugurate in the near future a course whereby men may be trained for official positions in the mechanical department.

SUMMARY

Thus, in the 19 years since the receivership the property has been entirely rebuilt and improved, the mileage has increased over 70 per cent, the number of locomotives has increased over 120 per cent, while the tractive power has increased even faster and the number of freight cars has increased 150 per cent. The density of traffic has more than doubled, while the present facilities are ample to handle a considerable further increase in traffic. This has been accomplished by the expenditure of over $298,000,000, for which over $217,000,000 of "new money" has been raised. With all these improvements the capitalization per mile of line has decreased from $61,500 in 1896 to a little less than $57,000 per mile, practically 50 per cent of which is represented

by stock, while the fixed charges consume but 11.6 per cent of the gross revenue. This work has been carried on from year to year without any suggestion of irregularities, or criticism of methods of financing or operation.

RAILWAY MILEAGE OF THE WORLD

A world-wide reduction in railway construction was experienced during 1913 as compared with 1912, according to the annual railway statistics of the world compiled by Archiv fur Eisenbahnwesen, the official publication of the Royal Prussian Department of Public Works. The railway mileage of the entire world for 1913 was 684,614 miles, an increase of 15,009 miles for the year, as compared with an increase of 16,770 miles reported for 1912. The gain in mileage was also less than that for 1911, and even less than that for 1908. The increase in 1911 was 15,078 miles; in 1910, 14,387; in 1909, 14,139, and 1908, 16,672. How pre-eminently the United States is the railway nation of the world is shown by the fact that over 37 per cent of the entire mileage falls within its borders. The increase for the United States, as compiled by this publication, was 4,979 miles, or almost one-third of the entire gain for the year; while out of the entire 15,009 mile increase, 9,910 miles were contributed by the two Americas.

Railway systems of the five great geographical divisions of the earth compare in miles of operated line, as follows:

	1913.	Gain in 1913.	Gain in 1912.
Europe	214,665	2,238	2,296
North and South America	353,467	9,910	10,181
Asia	67,051	1,486	1,376
Africa	27,472	994	1,375
Australia	21,959	381	1,489
Total	684,614	15,009	16,717

Asia, it will be noted, was the only continent to show a larger increase in 1913 than in 1912.

The overwhelming leadership of the United States as a railway nation is shown more clearly in a comparison of individual countries, for after its 254,769 miles (including 653 for Alaska), Germany is second with only 39,513 miles, while European Russia is third with 38,563. Then follow in order, British East India, 34,572; France, 31,737; Canada, 29,233; Austria-Hungary, 28,641; Great Britain, 23,385; Argentina, 20,593; Mexico, 15,805; Brazil, 15,491; Italy, 10,933; Spain, 9,517; Sweden, 8,984, and Japan, 6,811.

In relative growth, however, the United States has not held its own, for while the world mileage in 5 years increased 9.6 per cent, our railways increased 7.7 per cent. This, however, exceeds Europe's growth of only 4.9 per cent. The Americas, as a whole increased 10.9 per cent in mileage in 5 years, while Asia increased only 8.8 per cent. Africa takes the leadership here with a growth of 32.3 per cent, the high spot being German East Africa, with 209.3 per cent. Australia's mileage increased 16.8 per cent.

Belgium remains at the head of the list in proportion of railway mileage to area, having 48.1 miles per 100 square miles. Next are Saxony with 34.1; Luxemburg, 32.5; Baden, 25.6; Alsace-Lorraine, 23.3; Great Britain, 19.3; all Germany, 19.0; Switzerland, 18.8; Bavaria, 18.2; Württemberg, 18.0, and Prussia, 17.5.

Though in this comparison the United States has only 7.1 miles per 100 square miles (including Alaska), many of its states are better provided than European countries, New Jersey having 30.7 miles; Massachusetts, 26.2; Pennsylvania, 25.7; Ohio, 22.4; Illinois, 21.4, etc.

Persia is still at the foot of the list with less than 1-200th mile per 100 square miles.

In relation to population, Western Australia leads the world with 72.5 miles per 10,000 inhabitants. Europe has only 4.9 miles, its best single record being Sweden with 16.4 miles. The United States, in contrast has 26.2 miles per 10,000 inhabitants. China is poorest with less than ⅕ mile per 10,000 population.

GOVERNOR BRUMBAUGH VETOES PENNSYLVANIA EXCESS CREW LAW

Governor Brumbaugh of Pennsylvania announced this week that he had vetoed the bill which was passed by the recent legislature to repeal the "full crew" law of that state (*Railway Age Gazette*, April 2 and May 14).

The governor, after reviewing the campaign carried on by the railroads to secure the passage of the bill, says that members of the legislature informed him they had been subjected to the pleadings of a "large and persistent lobby." The extra man required by the present law above the number willingly carried by the companies, he says, has added materially to the safety of the traveling public.

"It has been proclaimed that the loss of life since the present law became operative has been substantially reduced, if not eliminated, so far as passengers are concerned, and that this is due not so much to the manning of the passenger trains as to the fact that freight trains do not menace passenger traffic. The additional man is not always busy, but he is needed when the unusual occurs, and his presence may save life or property, or both."

Referring to the argument of the railroads that the full crew law added to the cost of operation, the governor cites the fact that the companies have within a year received increased freight rates by action of the Interstate Commerce Commission, and adds:

"They had scarcely secured the increased rate until steps were taken to repeal this law."

The governor says the railroad companies deserve fair consideration, and that if "they can demonstrate to him within the next two years that the law now in operation is not fair to them and to employees, it will be the duty of all officials to do justly by them."

President Rea of the Pennsylvania Railroad in a statement on Govenor Brumbaugh's veto of the "Extra Crew Law" repeal said:

"Speaking for the Pennsylvania Railroad Company, the most important transportation agency of our state, and with 32,000 of its 92,500 stockholders living within the state, I can only say that we are surprised and disappointed at the governor's action in vetoing the bill for the repeal of the so-called full crew law, which was passed by the legislature to correct a gross injustice to the railroads of the state and relieve them and the public of the enormous and wasteful expenditure which the extra crew law imposed on them.

"There is no well-founded reason or fact given in the veto to justify it, and, while I am entirely satisfied that the public should form its own judgment, it seems proper that particular attention should be directed to the fact that the very purpose of the bill, namely, to empower the Public Service Commission of the state to require railroad corporations to employ an adequate number of men upon their trains, is singularly ignored in the veto, notwithstanding that it practically meets every objection advanced by the government.

"The financial condition of the railroads throughout the country today is already well known, and on economic grounds alone there never has been any valid reason why they should be bound by statute to employ a stipulated number of men on passenger and freight trains irrespective of necessities or conditions. The legislature has adjourned and therefore the action of the governor in the exercise of his power has re-imposed this injustice on the public and the railroad companies for at least another two years, and places upon them an unwarrantable burden during that time of $2,700,000."

French Somaliland Railway.—According to a telegram received in Paris from the governor of French Somaliland, the railway connecting Dijibut with Adis-Abeba was completed on April 21.

Transportation in Chicago During a Traction Strike

For Three Days Steam Railroads Handle Over Six Hundred Thousand Passengers Daily Without Accident

The railroads entering Chicago made a remarkable record last week in handling an unprecedented number of passengers into and out of the business district during the strike of the motormen and conductors of the surface and elevated roads. The strike lasted from midnight on Sunday, June 13, until about 11:00 a. m., on Wednesday, June 16. During that time the surface lines operated no cars and the elevated lines made practically no attempt to carry passengers. As a result a population of about 2,500,000 was suddenly made dependent upon the steam railroads for transportation, except such as was afforded by automobiles, motorcycles, bicycles, omnibuses, motor trucks, wagons and carriages, and the steam roads were called upon over night to handle an increase of traffic which ordinarily would take years to develop.

The steam railroads normally carry about 125,000 suburban passengers daily, in addition to about 75,000 through passengers into and out of the city. During the first two days of the strike it is estimated that they handled about 625,000 a day in the suburban service, or about five times their regular business. Moreover, although this volume of traffic was thrown upon the roads almost without warning it was accommodated so successfully as to arouse general favorable comment, and without an accident of any kind being reported. In fact, after the roads had had time to adjust their facilities to the situation, several of them could easily have handled even greater crowds with success.

The steam roads entering Chicago radiate from the central business district in all directions, except toward the east. The bulk of the suburban traffic is handled by three roads, the Illinois Central running south along the lake shore; the Chicago & North Western, which has three lines out of the Chicago passenger terminal, one running directly north, one running northwest and one running west, and the Chicago, Rock Island & Pacific, running south and serving that portion of the south side lying west of the territory served by the Illinois Central. Most of the other roads also have some suburban business.

The elevated roads have one line to the south side with two branches into the territory served by the Illinois Central and one into that served by the Rock Island, and lines to the north, northwest and west, serving a territory which is reached by the North Western and other lines. The surface lines also radiate in all directions. The steam roads, of course, carry many passengers from points farther out from the city than the termini of the surface and elevated lines, and from many points they carry passengers in direct competition with the surface and elevated lines. The traction lines also carry many people from points that are beyond convenient walking distance from the steam lines, especially within a radius of three to five miles of the central district, where the steam roads are elevated and have fewer stations.

View of Crowd in Concourse of Chicago & North Western Passenger Terminal During the Monday Evening Rush

During the strike people living too near the business district to be within convenient reach of the steam road stations either walked to and from the city or patronized the hundreds of jitney busses and other vehicles that were pressed into service. From some outlying points where the distances between the steam lines are greatest many people also used vehicles of some sort to reach the steam roads.

ENORMOUS INCREASE OF TRAFFIC WITHOUT WARNING

If the roads had had definite fore-knowledge as to when the strike would begin, the achievement would have been considered less extraordinary, but they had only about six hours' notice after the strike was actually called. Conferences had been held during Sunday afternoon and evening in the mayor's office in the effort to reach a settlement and the traction companies had asked that the final decision be withheld until after a directors'

meeting on Monday. It was late in the evening when the labor leaders gave instructions to the men to leave their work. The strike had been threatened for over a week and the roads that would be called upon to handle the largest traffic had taken more or less active steps toward preparing for the emergency, but after the strike had been threatened and postponed two or three times many believed that the controversy would be settled.

Therefore, the task with which the roads were confronted presented a problem unique in their experience. The most difficult part of it was that of taking care of the Monday morning rush. Although every available car had been pressed into service there had not been sufficient time to complete arrangements. There was no way of ascertaining how big a crowd would have to be handled. Most of the regular patrons of the traction lines did not know that their usual means of transportation would be unavailable until they read their newspapers in the morning. Therefore the rush for the steam roads was concentrated into a very short space of time, and a large part of the people were unfamiliar with the steam road facilities and were without tickets, as well as being more or less panic-stricken because of their uncertainty as to whether they could be taken care of.

In addition to the inbound rush many roads were called upon to transport large numbers of people at the same time to outlying industries. Stations which normally handle two or three hundred passengers, distributed over a period of two hours, were stormed between seven and eight by thousands of people crowding to buy tickets and clamoring for information about the time of trains. Many stations did not have an adequate supply of tickets or of change, nor were there enough ticket sellers to handle them if they had been available. At stations with turnstiles or gates lines of people often extending for a block or more were formed. At others people crowded into the trains without tickets and swamped the collectors with so many cash fares that they were unable to take up all of the tickets. At some stations people had to wait as much as an hour while loaded trains passed without stopping, or if they did stop men climbed on to the roof of the coaches and the engines and tenders. On some roads whose terminal facilities were inadequate for the additional trains run there were delays on the way downtown, but the rush crowd had been taken care of by 9 o'clock.

In most cases the people were agreeably surprised to be taken care of as well as they were and the public generally accepted the situation with good nature, endeavoring to aid the roads in meeting the situation. During the day the roads were able to make more adequate arrangements. Additional equipment was obtained, additional ticket supplies were furnished, signs were posted in the stations urging the public to buy 10 or 25 ride tickets, and indicating where trains were to be found, extra ticket booths were erected and new plans were made for the handling of trains. The evening crowds, however, presented new problems because they were concentrated at the downtown terminals and on Monday there was a great deal of confusion and congestion, many people having to wait as long as an hour for trains. By Tuesday the arrangements were working smoothly, the people knew where to look for trains and were not so afraid of being left and so did not crowd so much as on the day before, and more of them had tickets. As a result there was very little congestion.

The strike was called off early Wednesday morning, but the surface and elevated lines did not get their service restored until nearly noon and the steam roads handled large numbers of extra passengers even after that time, partly because so many had purchased commutation tickets and partly because many people who had formerly used the local lines after having been introduced to the steam road service decided to continue to use that service.

ILLINOIS CENTRAL

The Illinois Central, which normally handles the largest suburban service in Chicago, about 40,000 passengers a day, competes directly with several surface car lines and also with the line of the South Side Elevated road as far south as Sixty-third street. This road naturally handled the largest crowds during the strike, as it operated the only railroad service in this territory. The Illinois Central's regular daily suburban service is 279 trains a day. During the strike it handled 311 trains in each direction, or a total of 622, and during the three days of the strike it transported a total of 678,640 passengers; 248,800 on Monday; 252,560 on Tuesday, and 177,280 on Wednesday. The officers had estimated it would be necessary to prepare for about 280,000 passengers a day. On Chicago Day during the World's Fair in 1893, the Illinois Central handled 1,000,000 passengers, but in that case arrangements had been made in advance and the traffic was fairly evenly distributed over the entire day, so that during the rush hours in the morning and evening it probably handled a larger traffic during the street car strike than in 1893. The road had made some preparations, but had not considered that a strike was seriously threatened until Sunday afternoon. The principal difficulty was in not being able to locate enough ticket sellers in time to handle the greatest rush on Monday morning. The additional force put on during the strike included 34 ticket agents, 40 ticket collectors, 20 directors, 50 engineers, 50 firemen, 30 conductors, 60 trainmen, 10 switchmen, 5 switch tenders and 15 supervising officers.

The entire movement was handled without a derailment or an engine failure. The suburban trains are operated on four tracks, of which two are used for express and two for local trains normally, but for about 60 ft. just south of the Randolph street terminal all trains must pass over a single track; therefore a derailment on this track would have resulted in very serious congestion.

The size of the regular trains was practically doubled, through coaches being used in some cases and regular schedules were abandoned. During the morning and evening rush hours, from about 7:30 to 9:00 or 9:30, trains were despatched on each of the four tracks every five minutes, making nearly one train to the minute. During the middle of the day a 15-minute schedule was maintained. Under ordinary conditions between 5 and 6 o'clock at night there are 78 distinct movements from Randolph street in one hour. In the morning many trains after arriving at Randolph street and being unloaded were backed to some of the stations nearest to the city in order to handle crowds northbound that could not be accommodated on northbound trains leaving Sixty-seventh street. Ordinarily the Illinois Central suburban service ends at 1:00 a. m., but during the strike trains were run throughout the night to accommodate night workers who ordinarily use the surface or elevated cars.

The first rush on Monday morning caused considerable congestion. At some of the principal stations the crowds were standing in long lines waiting to buy tickets. As soon as possible extra ticket sellers were placed at the various stations. During the day 40 temporary ticket booths were erected at the various stations from Randolph street south to Sixty-seventh street, and at the downtown stations a number of ticket clerks mingled with the crowds selling tickets. For express trains tickets were collected at the gate. At both the Randolph and Van Buren street stations downtown four temporary booths were erected. Large signs were placed in all the stations urging passengers to buy 10 or 25 ride tickets in order to save time and money.

An officer was placed at each suburban station to keep in touch with the situation at that point and advise the superintendent of terminals at the downtown office. These included a number of operating men and also a number of general officers. One man was stationed at Sixty-seventh street to supervise the work of turning engines to avoid delays, and another one at Randolph street.

As approximately 2,000 people are employed in the Illinois Central's general offices, most of whom use its suburban service, the offices were closed at 4 o'clock instead of 5, and opened an hour earlier than usual in the morning, so that the rush hour

traffic would not be complicated by this addition, and in the evening special trains were made up at 4 o'clock to accommodate the office forces.

CHICAGO & NORTH WESTERN

The Chicago & North Western had made some preparation in anticipation of the strike two or three days before it was actu-

Entrance to Randolph Street Terminal, Illinois Central

ally called, and had made some arrangements for having extra equipment available. On Sunday night, when it was known definitely that the strike had been called, coaches were ordered in from St. Paul, Omaha and South Dakota. The North Western normally handles about 50,000 passengers a day. On Tues-

Suburban Station During the Rush Showing Temporary Ticket Booth

day, the second day of the strike, it estimated that it handled 194,300 suburban passengers in 288 trains between 6:00 a. m. and midnight, in addition to 93 regular through trains to and from points outside the suburban district, with about 14,000 passengers. The capacity of the terminal has been estimated at 250,000. The number of trains and passengers handled on the different lines on Tuesday is shown in the following table:

	Trains			Passengers		
	North and west	South and east	Total	North and west	South and east	Total
Milwaukee Line ...	66	72	138	46,200	45,400	91,600
Barrington Line ...	35	36	71	24,500	23,700	48,200
Galena Division	40	39	79	28,000	26,500	54,500
Totals	141	147	288	98,700	95,600	194,300

As soon as the strike appeared imminent rush orders were placed for thousands of extra tickets between the various suburban stations and Chicago, but on Monday some of the stations ran out of tickets. The most difficult rush to handle was that on Monday morning before complete preparations had been made, and on Monday evening, when a very large percentage of the passengers were still unfamiliar with the terminal. In the morning an attempt was made to adhere to the regular schedule of local and express trains, adding extra cars to trains and running the trains in sections, but by evening it was decided to abandon the regular schedules. Many trains were so fully loaded that they were obliged to omit station stops, leaving crowds waiting at the stations. From some stations trains

Increasing the Efficiency of the Tender

were loaded and rushed into the city without attempting to make other stops. Hundreds of people were carried free. On Monday afternoon the rush began about 4 o'clock, and the Chicago passenger terminal with its many entrances was jammed to its capacity. Newspaper men with counters estimated that people were entering the station at the rate of 500 per minute at 4:30. Trains were despatched as fast as they could be placed in the terminal. At times as many as 12 tracks were used for loading at once, and the rush hour crowd had been completely taken care of by 7 o'clock.

As soon as they could be printed, large signs were posted all over the station, bearing the words "Passengers, give us a little time and we will take you home." Other large signs were hung at the gates to the trainsheds showing the tracks from which the trains would leave and the stops to be made by each train. A large canvas sign was stretched across the concourse with the words "Buy your tickets now for tonight."

On Tuesday the arrangements had been so perfected that the crowds were handled without difficulty and many thousands more could have been taken care of. Outbound trains were

despatched at intervals of about 3½ minutes. The trains were made up just outside of the station ready to back in as fast as the track was cleared, with six to ten cars to a train. About 100 clerks from the general offices were sent to the passenger terminal wearing caps or badges, and each was given a series of small cards, duplicates of the placards hung at the gate to each track, showing which tracks the trains would leave from and all stops to be made. This proved a most effective plan. These men were scattered through the crowds at various points throughout the terminal and directed the passengers to the proper tracks, telling them that a train would leave at once, and were of great assistance in promoting an orderly movement of the crowd. In a balcony overlooking the trainshed and concourse a train announcer with a megaphone shouted directions for reaching the trains, and advised the people to take their time and not crowd.

Five or six extra ticket sellers were placed at the principal suburban stations during the rush hours, many of them clerks from the ticket auditor's office. At all stations within the zones within which most of the traffic is ordinarily handled by the elevated and surface lines temporary ticket booths were erected and the stations were operated on the "pay-as-you-enter" plan. These booths were placed at all stations between Chicago and Oak Park, on the Galena division, Irving Park on the Wisconsin division, and Ravenswood on the Milwaukee divison. Extra ticket sellers were on duty at the ticket windows in the terminal, two at each window. Many people who had only bought single ride tickets in the morning stopped while in the terminal and bought commutation tickets in order to save time on the return trip in the evening. During the evening rush incoming trains were unloaded at the Washington street entrance to the station just outside the trainshed, so that trains were backed into the terminal empty.

On Wednesday morning the traffic was handled on regular schedules, with extra sections and extra cars.

The photograph of the crowd in the North Western terminal shown herewith was taken during the height of the rush on Monday evening before all arrangements had been perfected and before the crowds became familiar with the arrangements. This shows less than one-half of the concourse. It will be noted from the faces that can be distinguished that the crowd was accepting the situation good humoredly. The officials of the North Western have received several hundred letters commending the way in which they handled the situation, many of the people stating their intention to continue to use the North Western.

CHICAGO, ROCK ISLAND & PACIFIC

The Chicago, Rock Island & Pacific which normally handles between 15,000 and 18,000 passengers daily in its suburban service, with 39 trains each way between Chicago and Blue Island, handled over 15,000 extra passengers in each direction a day during the first two days of the strike, making a total of about 30,000 extra passengers a day. This was accomplished while adhering strictly to the regular schedule by putting extra cars on the regular trains and by operating four extra trains during the morning and evening rush hours at 15 minute intervals, between Washington Heights and Chicago, sandwiching them in between the regular trains.

The entire movement was handled by C. B. Pratt, superintendent of the Chicago terminal division. Mr. Pratt began making preparations several days before the strike was called. In the middle of the preceding week he called in a trainmaster and outlined a plan for handling the additional traffic if the strike should occur, which was carried out later in detail. It was thought that practically all of the people who were in the habit of using street cars to go into and out of the city live north of Washington Heights, One Hundred and Third street, and that the emergency could thus be met by operating extra shuttle trains between Washington Heights and Chicago. Mr. Pratt kept in touch with the situation by telephoning one of the newspapers, and about 2 o'clock, Sunday afternoon, he was told that the strike seemed to be inevitable. The cars and locomotives had been provided for and were ready at Blue Island. The extra crews were then arranged for and a trainmaster and a road foreman of engines were stationed at Blue Island all Sunday night. Monday morning four trains were started from Blue Island about 5:00 a. m. for Washington Heights and left Washington Heights for the city at 5:30 and every 15 minutes thereafter, with six cars in each train and a collector for each two cars. Three extra ticket sellers were placed on duty at the La Salle street station downtown and three at the Englewood station, and two extra men were placed in the information bureau. The plan was adhered to until after the strike had been declared off on Wednesday morning, and the entire service was operated with a maximum delay to any regular suburban train of 11 minutes on Monday and 10 minutes on Tuesday. The morning rush on Monday lasted until about 9:30, when the extra trains were taken off and placed in readiness for the outbound rush in the afternoon on storage tracks just outside the La Salle street station. There they were ready to back in for the evening rush, which began about 4 o'clock, as many offices were closed at that time.

The greatest difficulty in handling the crowds was experienced on Monday evening, but by Tuesday evening the people were handled practically without confusion. On Monday the bulk of the crowd had been taken care of, and the depot was on a normal basis by 6:30 p. m. On Tuesday the rush began about 4:30 and the station was clear by about 6:10. On Tuesday evening between 4:45 and 5:55, 22 trains of six cars each, including 10 regular trains and the 4 extra trains which made three round trips each, were backed into the station, loaded and despatched on two tracks. At an average of 100 people per car, this made a total of 13,200 in a little over one hour.

On Monday morning between 7:20 and 9:00, six extra trains were run, in addition to the regular trains. On Tuesday morning seven extra trains were run during this time.

During the rush an engine was placed just outside the trainshed ready to back into the rear end of a train just as soon as it entered the station. Then the train was run out leaving the first engine, which was then backed out and placed in readiness to take out the next train. On Wednesday morning one train was despatched out loaded in just three minutes after it had arrived in the terminal loaded, and at other times trains were on their way out in from three to five minutes after their arrival. On Wednesday afternoon the Rock Island cut the extra service in two and on Thursday morning was able to handle its passengers by running eight-car instead of six-car trains on the regular schedule.

A road foreman of engines was stationed at Washington Heights, and a trainmaster at Englewood, while Mr. Pratt took charge at the La Salle street station. An extra train was placed on the track adjacent to the one on which the regular trains stood, and the gates from the concourse were thrown open long enough to let in about enough people to load the extra train. Then Mr. Pratt walked along beside the train, and if it was not fully loaded he told the gateman to let in more passengers. As soon as the extra train was despatched the gates were thrown open again for the regular train.

A count was kept of the tickets sold to inbound passengers. On Monday 9,898 tickets were sold; on Tuesday, 10,036, and on Wednesday, 6,342. A large proportion of these were commutation tickets, and most of them represent extra passengers. On Monday a great many people paid cash fares on the trains at the rate of three cents a mile. One collector reported 52 cash fares from one car, between Englewood and Chicago, which, of course, meant that a large number escaped paying fare altogether. On Monday evening large signs were posted in the stations advising people to purchase tickets in advance and save money by avoiding the necessity of paying the cash fare rate. Large placards were also hung on the ends of the

trains giving, in three-inch letters, the names of the stations at which the trains would stop, in addition to the regular train indicators in the concourse.

CHICAGO & WESTERN INDIANA

The normal suburban traffic on the Chicago & Western Indiana averages about 4,000 passengers a day, handled on 15 trains. As soon as the strike order was sent out Sunday night the operating officials were called together by the general superintendent for a conference. This lasted throughout Sunday night and arrangements were made for the operation of special trains, in addition to the regular trains at intervals of about 10 minutes during the rush hours of the morning and evening.

The men to handle these trains were got together in various ways, some were picked up in automobiles and others living nearer to the road were handled on a special train called for this purpose. The first special suburban train left the outer terminal at Dolton about 5:30 a. m., arriving at the Dearborn station about 6.10 a. m., and the special service, together with the regular trains, were operated close together without interruption until about 9:00 a. m., when the stations were all practically cleared. Trains throughout the day were run at intervals of 30 minutes to one hour.

The service was increased beginning about 4:00 p. m. to take care of the crowd homeward bound, and while the limited facilities at the Dearborn station, in most instances, prevented placing more than one train in the shed at a time, the loaded trains were pulled out and empty trains set with such regularity that the immense crowd was entirely cleared out of the station on Monday evening by 7:30 p. m., and on Tuesday evening by about 6:45 p. m.

The Chicago & Western Indiana operated in all 42 extra trains, handling at least 30,000 passengers daily, in addition to the regular traffic. While all trains were crowded, and at times the people were even held back for a short period in the concourse and waiting rooms, this unusual crowd was disposed of without great inconvenience to anyone and without accident.

CHICAGO, BURLINGTON & QUINCY

The Chicago, Burlington & Quincy, which normally handles each way between Chicago and intermediate stations to Riverside about 2,500 people per day, estimates that during the rush periods of the strike it handled each way to and from this district about 17,000 people, or 34,000 people each day, counting inbound and outbound passengers. The principal part of the rush was to intermediate stations up to and including Riverside. Beyond Riverside the additional business was handled by regular trains, all of which had some additional equipment. The rush period was between the hours of 4:30 and 6:40 p. m. Between those hours the Burlington ordinarily had 16 suburban trains leaving the Union depot. During these rush hours four additional trains were added, as that was about all the trains that could be sandwiched in between the regular trains and find track accommodations at the Union depot, where the facilities for handling a rush of that kind are somewhat limited. Inbound from Clyde and intermediate stations in the morning there were five special trains, in addition to the regular suburban trains. Additional coaches were placed on all of the 16 regular trains in the rush hours, and these with the special trains made some 75 additional cars in suburban service.

PENNSYLVANIA LINES

The Pennsylvania lines ordinarily handle but very little suburban business in the Chicago territory, but when it became known that the street car strike would probably be called at Sunday midnight, immediate arrangements were made to take care of the people employed at the several industries along the lines, as it was realized that the Pennsylvania would have to supply the means of transportation to take the place of the surface lines and elevated lines on which they usually travel. By placing additional coaches on all of the regular trains, and scheduling a number of extra trains, and making additional stops at convenient locations, all of these people were accommodated very satisfactorily. During the three days about 75 additional coaches were used and about 50 extra trains were run, carrying about 10,000 passengers, which is about four times the normal number.

There was a great crowd at the Union station in the evenings, but by giving preference to the suburban passengers, and with the assistance of the special city officers, in addition to the railroad forces, the people were handled with comparatively little confusion and absolutely no accidents.

CHICAGO, MILWAUKEE & ST. PAUL

The Chicago, Milwaukee & St. Paul does not operate a very extensive suburban business, but during the strike it operated a number of extra suburban trains into and out of an old station at Kinzie and Kingsbury streets because of the congestion in the Union Station. On Monday morning it was somewhat swamped by the unusually large number of people who tried to avail themselves of its facilities for getting down town, but by Tuesday arrangements were so perfected that the people were handled with little confusion, and during the three days the company handled about 50,000 suburban passengers.

GRAND TRUNK

For several days before, the Grand Trunk held at Elsdon several coaches in readiness for use if the strike was called. On Monday coaches were moved empty for several hundred miles in order to accommodate the suburban passengers along its lines in the southwestern part of the city. During the three days of the strike, in addition to the regular suburban trains, the Grand Trunk operated 20 special trains with an average of 8 cars per train, and handled a total of 31,331 suburban passengers. Of this total it was estimated that 24,731 had used the line on account of the absence of their usual transportation facilities. The 20 special trains handled a total of 9,403 passengers.

CHICAGO & ALTON

The Chicago & Alton handles a very small portion of the suburban traffic under normal conditions, as it serves a very limited territory of suburban homes. Since to a very considerable extent the people living in the southwest part of the city would be unable to get from their homes to their business in Chicago and back unless special service were furnished, two special trains were run in the morning from the Harrison street yard, one to Brighton Park and the other to Argo, the latter a point 13 miles out from Chicago. Return service was furnished from Argo to Chicago, leaving Argo at 5 p. m. Arrangements were also made to stop all of the regular trains at Halsted street, Thirty-first street, Thirty-seventh street, California avenue, Brighton Park, Corwith and Glenn, and the morning trains on Monday, Tuesday and Wednesday carried about 5,000 people into the city, handling as many on the returning trains on Monday and Tuesday nights.

BALTIMORE & OHIO CHICAGO TERMINAL

The Baltimore & Ohio Chicago Terminal, over which the trains of the Baltimore & Ohio, the Pere Marquette, the Chicago Great Western and the Minneapolis, St. Paul & Sault Ste. Marie enter the Chicago terminal, operates very little suburban service and has few stations within the city. The company did not anticipate that there would be a strike, and when at 7 p. m. on Sunday it received definite assurance that the strike would be called there were a great many details to be worked out. It succeeded in securing 33 coaches from various roads during the night, clerks were called out to act as collectors and a suburban train service was put into operation at 6 a. m. on Monday. It was necessary to use switch engines for this service, temporarily, at least, interfering seriously with the freight operations. On Monday this company ran 17 special trains between Forest Park on the west and Sixty-ninth street on the south and the Grand Central station. Additional coaches were also added to the suburban

trains from Chicago Heights to Chicago. The tenant trunk lines also arranged to pick up suburban traffic at various points on the line. On Tuesday 16 special trains were run. Arrangements were also made to honor B. & O. C. T. tickets on the Baltimore & Ohio trains. On Wednesday morning seven additional trains were operated. It is estimated that not less than 18,000 people were handled on these special trains between Monday morning and Wednesday morning.

WABASH

The Wabash, which uses the terminals of the Chicago & Western Indiana, normally handles about 700 people a day in suburban service. During the strike it put 10 extra coaches on its suburban trains, but did not operate any special trains. On Monday it handled 5,812 passengers; on Tuesday 5,710, and on Wednesday morning 3,308 passengers, making all regular stops between the Dearborn Station and Hamilton Park.

NEW YORK CENTRAL

The New York Central ordinarily handles comparatively little suburban service. During the strike extra trains were operated to the Union Stock Yards, both from Chicago and from Englewood, in the morning and the evening to accommodate several hundred people employed in the packing houses. The regular and through service was heavily patronized, but it was not necessary to add much extra equipment. Local and suburban trains which normally handle 4 and 5 cars were increased to 10 and 12 cars, which were very heavily loaded but which were easily handled with this company's large locomotives. Extra train collectors and ticket selling facilities were provided and the extra traffic was handled without difficulty.

THE INTERCHANGE PROBLEM IN YARD OPERATION

By E. C. Tucker

Yardmaster, Norfolk & Western, Portsmouth, Ohio.

In the operation of terminals and team track districts, economy of operation is secured by the reduction in the number of switches per car required to handle or forward each individual car. This should be considered for each car the entire time it is within the terminal superintendent's jurisdiction to get to the best results. Duplication of work is many times the cause of high terminal operating expense. It may be present in duplication of reports, records, switch movements, and many other ways.

The best aid to economy in yard operation is system. As far as practicable there should be a certain time, place and manner of performing every part of the work each day, with certain employees to perform it. If the same employees perform a certain service each day, they become familiar with every phase of that part of the work, so that it is performed in the shortest time and more correctly.

The movement of traffic between the classification terminal and the point of receipt or delivery to the connecting lines has a great influence on the terminal yard. Whenever possible advance notice of the volume of traffic expected and the approximate time it will arrive and be ready for the connecting line should be given to the connecting line officers in charge. This is especially necessary in preventing congestion on both the home line and the foreign line tracks during a period of sudden heavy movement of traffic.

Where a terminal delivers considerable or all of its traffic to several connecting lines, the cars destined to connecting lines having the greater volume of traffic should come into the terminal yard classified according to the connecting line, so that the entire cut of cars may be together in the incoming train and may be placed by the road or yard switching crew direct on the receiving track of the connecting line with practically one switch for the entire cut of cars, and within a short time after the cars arrive in the home line terminal yard.

Where there are connecting lines handling a relatively small amount of traffic the cars routed via these lines receive the best movement if they are received at the terminal yard in a joint classification, currently, to be classified after arrival, instead of being held at the distant classifying yard, waiting for a sufficient number of cars of each classification to accumulate and be forwarded. If the connecting lines averaging the smaller amounts of traffic are offered the small collections of cars at more regular intervals during the day they can more readily accept their interchange as it is offered, thus keeping each receiving line open for traffic and also reducing delays to the cars and overcoming more or less congestion in the home line terminal yard.

Usually two tracks are assigned for the traffic of each connecting line, for delivery and receipt, respectively. The receipt of cars should be considered just as important as the delivery of cars. It frequently occurs that the yardmaster will deliver cars to a connection but will fail to pull the receiving track at the same time. This is not fair to the connecting line. It causes delay to traffic routed via the home line, and additional expense of the switching crew by requiring two movements to this particular connecting line's transfer, which could have been covered by one. Before delivery is made of any cars to the connecting line some arrangement should be made to have all cars and bills checked so that correct billing is promptly delivered covering every car placed on the connecting line receiving track.

Since freight solicitors secure traffic for foreign lines as well as for the home road, the connecting line should be prompt in receiving all freight which reaches the junction point in any manifest trains. The transfer should be cleared at the proper time to receive this preference freight, sufficient interest having been taken so that arrangements are made by the connecting line not only to receive it as soon as offered, but to forward it in its manifest trains. When high class freight misses the schedule, both lines stand to lose the traffic and both lines should, therefore, work together and protect the business secured by their commercial agents.

A clear seal record should be kept, especially of the time cars are received and delivered. Both lines should be interested in scuring these records as promptly after cars are set on transfers as possible. Many cars are pilfered on interchange and other tracks annually, but on account of an imperfect seal record the lost freight cannot be checked to either line, delaying the claim of the shipper and creating considerable labor in the claim department.

It is frequently noticed that one road will apparently hold a perishable shipment even though the connecting line is anxious to receive it for movement, and will fill the transfer to the connecting line, placing the perishable last in the track in an effort to compel the connecting line to receive the entire draft of cars, even though they may be unable to handle them successfully just at that time. This will usually work more harm than it does good, sometimes delaying the perishable load or manifest train, and invariably acting against any harmony in working of interchange tracks.

The handling of perishable or refrigeration shipments demands the most careful and exacting attention at interchange points. The billing should be checked for proper transportation information and the shipments themselves should be carefully examined as regards refrigeration and if additional icing is required, even though not called for by billing, the cars should be iced and that information recorded on the billing and otherwise as may be desired. No car under refrigeration should be allowed to leave the terminal until it is known to be iced sufficiently to protect the shipment to the next re-icing station, and in case of considerable distance between such stations, allowance should always be made for unforeseen delays.

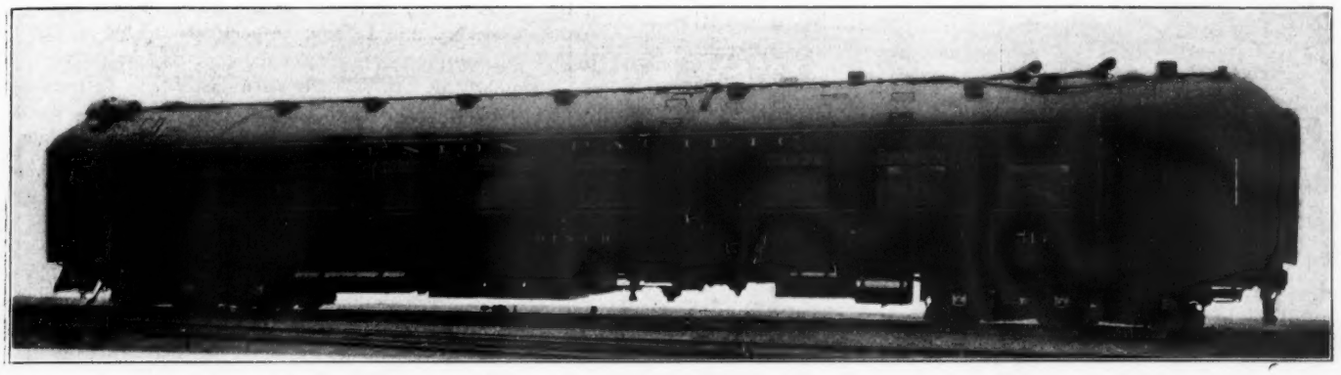
Promptness in handling cars to and from transfers reduces per diem, and per diem, from a yardmaster's viewpoint, should mean a loss of earnings rather than a gain. Reduction of per diem will increase track space, which is a big item in prompt and economical handling of traffic through the yard.

Steel Passenger Equipment for the Union Pacific

Includes Dining, Baggage-Buffet, Chair, Baggage, and Postal Cars of Arch Roof Type; I-Beam Center Sills Used

The Union Pacific has, during the past year, added to its equipment a large number of all-steel cars for passenger train service. These cars were built by the Pullman Company and include dining, combination baggage-buffet, chair, baggage and postal cars and coaches.

The dining cars are 72 ft. 6 in. long over the end sills and the end sills and are mounted on six-wheel trucks; the total wheel base of the car is 67 ft. 9½ in. The seating capacity is 28, and the weight of the car ready for service is about 139,000 lb. The bodies of the chair cars and the coaches are the same, the length over end sills being 70 ft., the length over platforms when coupled, 77 ft. 11 in., and the wheel base 65 ft.

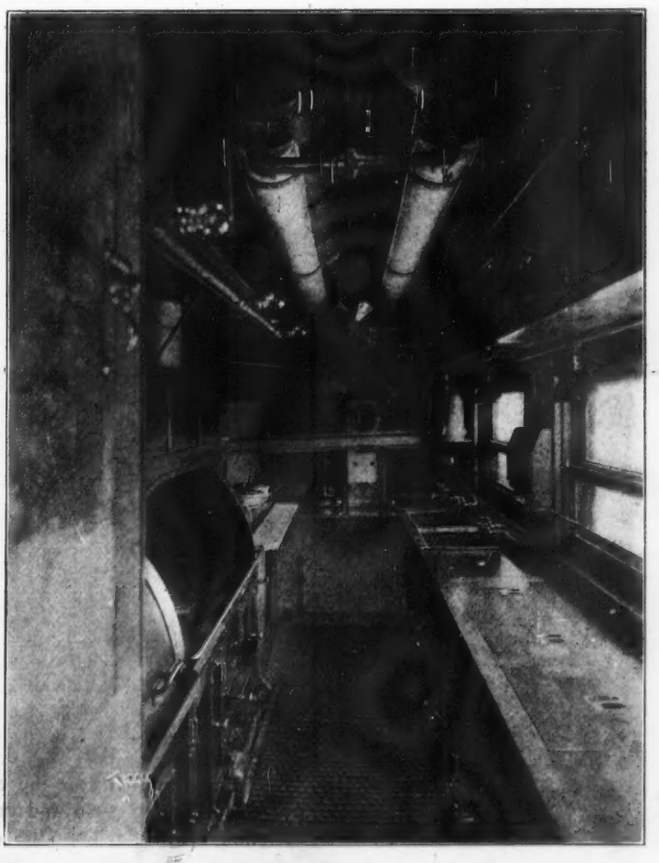


Union Pacific Steel Dining Car

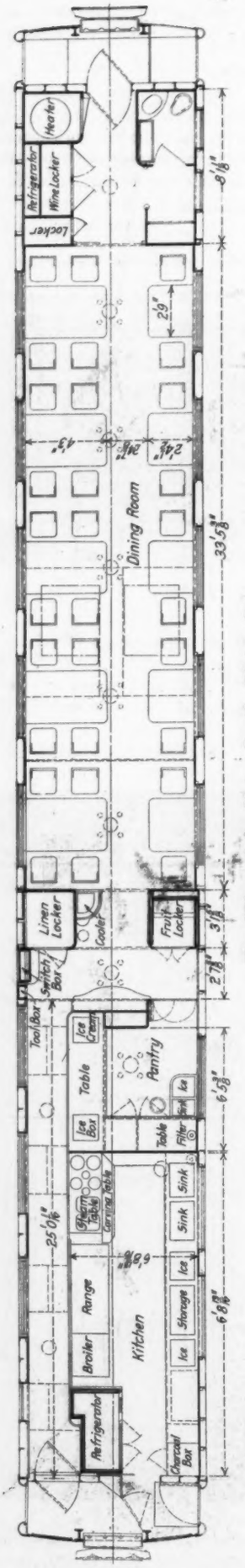
80 ft. 5 in. long over the platforms when coupled. They are mounted on six-wheel trucks with 11-ft. wheel base, the wheel base of the car being 67 ft. 9½ in. The weight of the car, complete, is about 148,000 lb., and there is seating capacity for 30 passengers.

The combination baggage and buffet cars are 75 ft. long over 3½ in. These cars are also mounted on six-wheel trucks and the weight of the car complete is about 138,000 lb. Some of these cars are equipped with a smoking room in one end, in which case the seating capacity of the chair cars is 70, while without the smoking room it is 72; when equipped with a smoking room the coaches have a seating capacity of 82, and this is

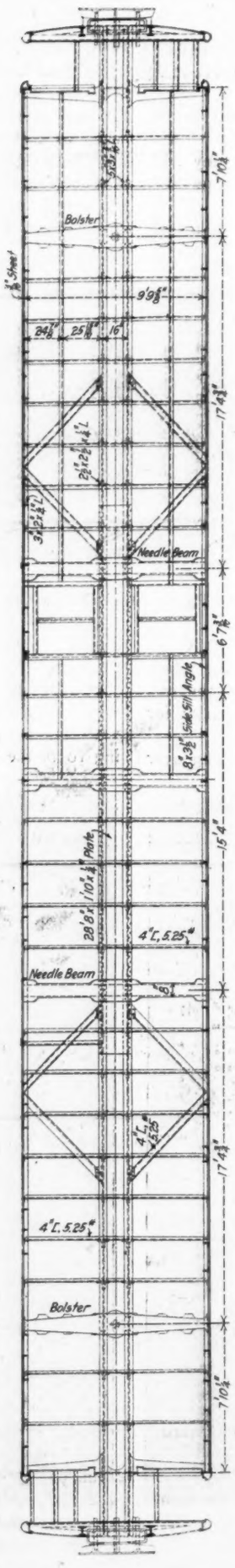
Interior of the Dining Car



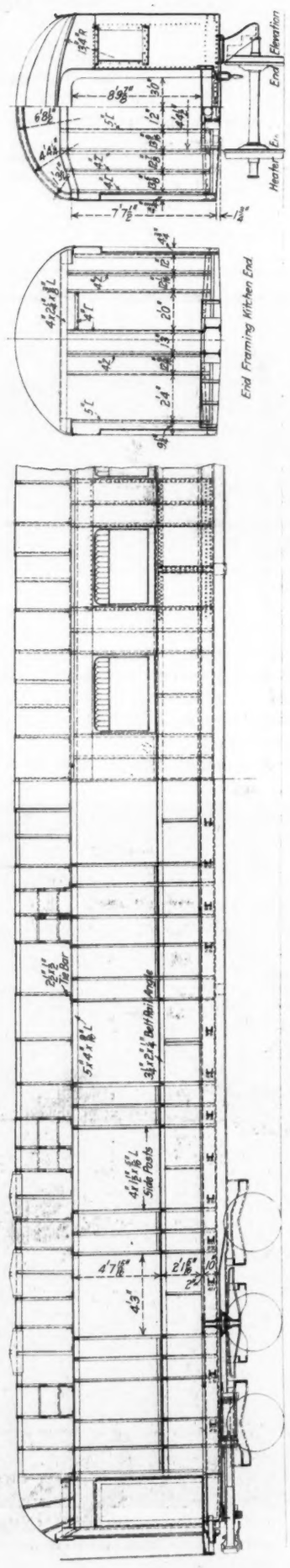
Kitchen of the Dining Car



Floor Plan of the Union Pacific Dining Car



Underframe of the Union Pacific Dining Car



Arrangement of the Frame Members in the Body and Ends; Union Pacific Steel Dining Car

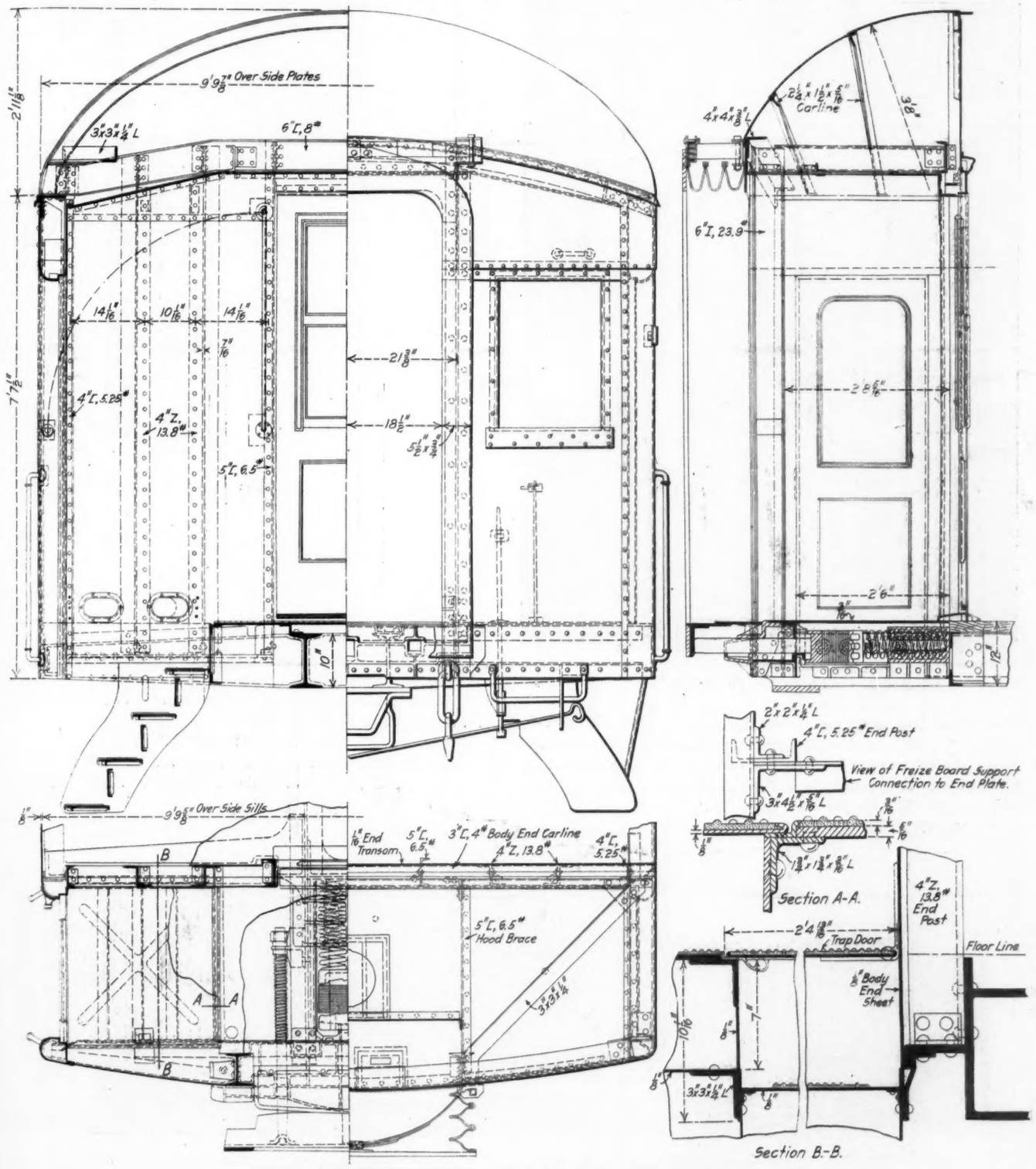
changed to 84 in the case of a car without a smoking room.

The baggage cars are 69 ft. 0⅞ in. long over end sills, 71 ft. 11 in. long over the platforms when coupled, and have a wheel base of 64 ft. 0⅞ in. They are mounted on four-wheel trucks and weigh about 106,000 lb. The postal cars are 60 ft. 1½ in. long over end sills, 63 ft. long over the platforms, with a wheel base of 55 ft. 1½ in. These cars weigh about 111,600 lb. The design of the six-wheel and four-wheel trucks is the same for all of the cars on which they are used.

The arch type of roof is used in all of this equipment, the suction type of ventilator being employed, the ventilation being satisfactory in every way. As the type of construction is similar in all of the cars, the framing for the dining car alone is shown in the illustrations.

UNDERFRAME

The center sills consist of two 15-in., 60-lb., I-beams placed at 16 in. centers and extending between the platform end sills. A



Platform and Vestibule Construction; Union Pacific Steel Dining Car

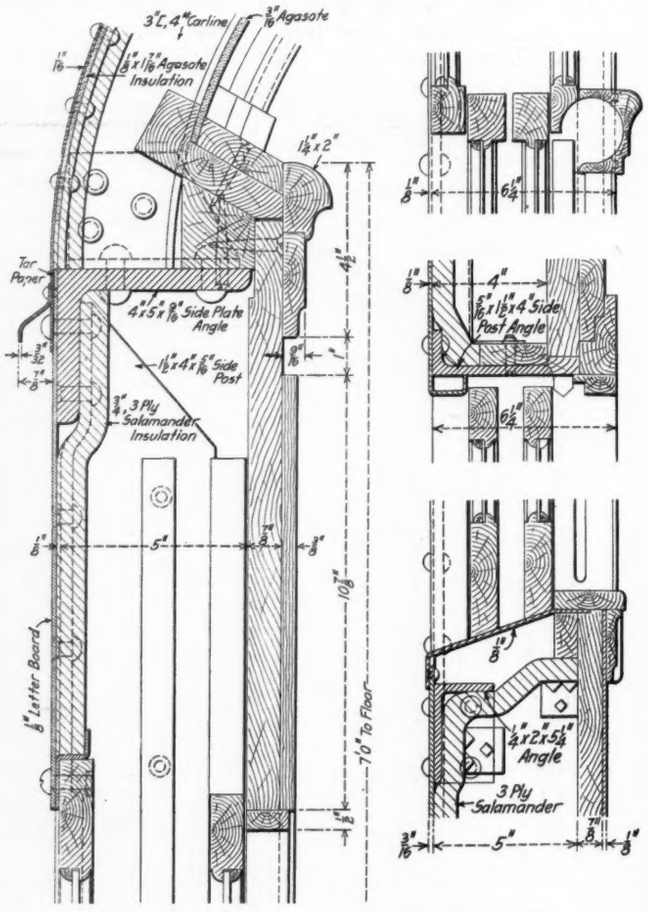
22 in. by ¼ in. top cover plate is used and the sills are given ⅜ in. camber. The body bolsters are steel castings; there are three cross bearers employed between the bolsters. The distance between truck centers is 56 ft. 8 11/16 in. Two sets of diagonal braces consisting of 4-in., 5.25-lb., channels are placed between

the center and side sills, and channels of the same size and weight are also used to support the floor stringers, which are 2½-in. by 2-in. by ¼-in. angles. The side sills are 3½-in. by 8-in. angles, a 3/16-in. plate being riveted to the side sill and to the belt rail, which is a ¼-in. by 2-in. by ¾-in. angle with the

Interior of Union Pacific Reclining Chair Car

2-in. leg on top, to which is riveted a 3/16-in. by 1⅜-in. by 2-in. angle. The 3/16 in. steel sheathing extends to a point just above the connection between the two belt rail angles, and ⅛-in. sheathing is used on the car body above this point.

posts consisting of 4-in., 13.8-lb., Z-bars. The vestibule door posts are 6-in., 23.9-lb., I-beams, braced at the top to the body corner posts by 3-in. by 3-in. by ¼-in. angles, while a 6-in.,

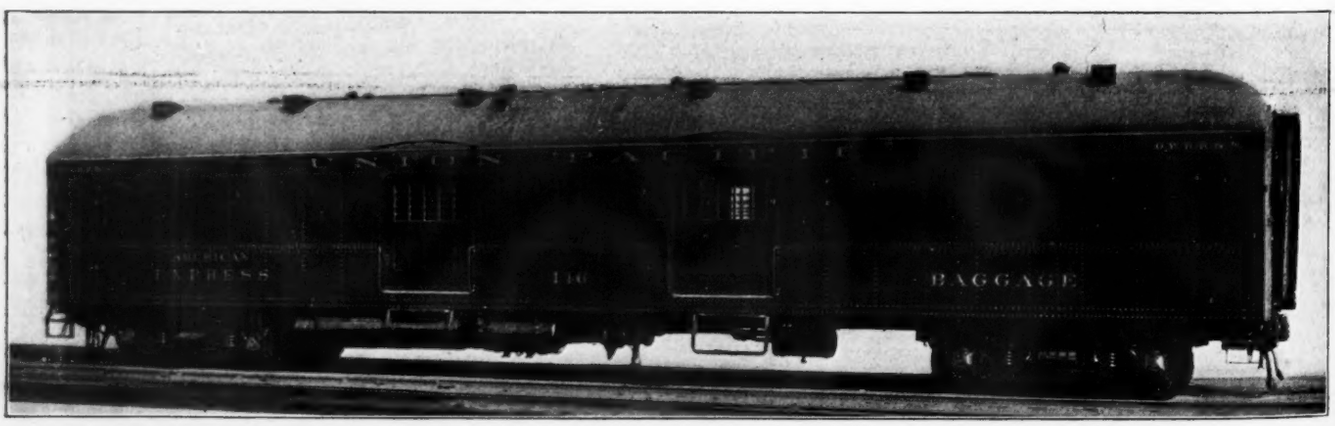


Some of the Dining Car Construction Details

8-lb., channel forms the vestibule end plate. The end sheathing of the car body is ⅛ in. thick.

FLOOR AND INTERIOR FINISH

Above the floor stringers is placed .04 in. galvanized iron, above which is a layer of ¾-in. Magnesite. Next to this is a



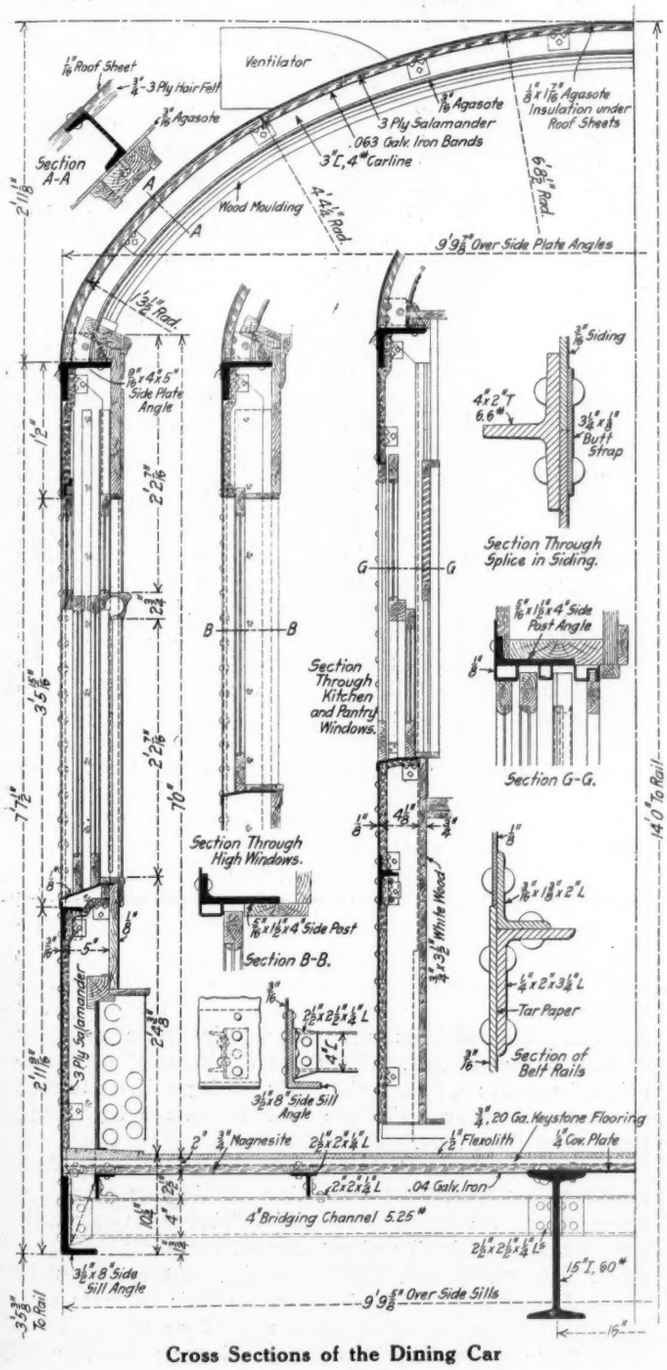
Union Pacific Steel Baggage and Express Car

BODY AND END FRAMING

The body side posts are 4-in. by 1½-in. by 5/16-in. angles and the side plate is a 4-in. by 5-in. by 9/16-in. angle. The carlines are 3-in., 4-lb., channels extending through between the side plates, and the end plate is a 4-in. by 2¼-in. by ⅜-in. angle. The body corner posts are 4-in., 5.25-lb., channels and the door posts are 5-in., 6.5-lb., channels, there being two intermediate

layer of ¾-in., No. 20 gage Keystone flooring, above which is placed the final flooring, which is ½ in. Flexolith. Three-ply Salamander insulation is applied to the inside of the steel sheathing and the interior finish and the window frames is of mahogany. Mahogany is also used in the baggage-buffet cars, but the interior finish of the chair cars and coaches is steel. The headlining is 3/16 in. Agasote.

The special equipment used includes New York air brake equipment, Chicago Car Heating Company's vapor system, Commonwealth cast steel truck frames, Creco brakebeams, Pitt couplers, Sessions friction draft gear, Waugh-Forsyth buffing device, Acme vestibule diaphragms, Utility ventilators, Transportation Utilities Company's window fixtures, National trap doors, Hale & Kilburn seats, Adams & Westlake's sanitary bubbling water fountains and white metal washstands, Duner flush closets, Johns-Manville Salamander hair felt insulation, Key-



Cross Sections of the Dining Car

stone floors, Rausch bag racks in the postal cars, Edison storage batteries and Gould axle lighting generators.

The following table gives some of the principal dimensions of the dining car:

Length over end sills	72 ft. 6 in.
Length over platforms, coupled	80 ft. 5 in.
Distance center of bolster to end sill	7 ft. 10¼ in.
Wheel base of car	67 ft. 9½ in.
Wheel base of truck	11 ft. 0 in.
Width over side sills	9 ft. 9⅛ in.
Width over side plates	9 ft. 9⅞ in.
Width over-all at eaves	9 ft. 11¾ in.
Height top of rail to underside of side sills	3 ft. 5⅛ in.
Height top of rail to top of platform	4 ft. 3¾ in.
Height top of rail to outer side of roof sheets	14 ft. 0 in.
Seating capacity	30

CENSORSHIP OF RAILWAY MESSAGES*

By W. W. Hall

Superintendent of Telegraph, Missouri, Kansas & Texas

I have for years been trying to eliminate unnecessary telegraphing. Requiring the managers of the offices to send in those messages which, in their opinion, contain superfluous words has not proved very successful. In August, 1912, I tried using symbol letters and file numbers in telegrams, according to a plan which had been used on the Santa Fe; and I issued a circular to agents and to others concerned, asking them to put a letter and a number at the end of every message, thus saving words in the reply. Each agent or officer was also called on to number his messages from 1 up to 999. At the same time an effort was made to have messages sent by train whenever practicable; and finally the vice-president in charge of operation authorized me to employ a telegraph censor. Offices were called upon to send in a whole day's business and the messages were carefully examined. Using a stereotyped form of letter proved unsatisfactory, and it was found best to dictate a separate letter in every case. Some departments resented this action of the telegraph department; but to these I got the vice-president to send letters, signed with his own name. This at once produced astonishing results; everyone began to wake up to the fact that there was a real campaign on to reduce telegraphing. Some of the heads of departments were displeased, but we are still sending some of these letters to the vice-president's office for signature.

A telegraph code is very useful, but most codes are too voluminous. We have one, adapted from one in use on the New York Central, containing less than 200 cipher words. With this code, in connection with the use of the file number and letter, we have reduced our telegraphing about 50 per cent. If I were to make a new code I would abandon the attempt to have the cipher word suggest the meaning of the sentence which it represents. A code should consist of uncommon English words of not over five letters.

Besides reducing the number of messages the messages are much shorter, and recently I have found operators handling 85 messages an hour. Many of these messages consisted only of a symbol letter, file number and two or three additional words.

The practice of using special envelopes for sending telegrams by train—envelopes marked "MAILGRAM"—is abused; the envelopes will be used for such a variety of letters that they fail to command respect. On the M. K. & T. a more systematic plan has been adopted. At important offices all messages filed after 4 p. m. are written and filed in duplicate, and where these messages can reach destination by mail before 9 o'clock the next morning the original is sent forward, in an envelope, the messages being numbered and all for one place being put in one envelope addressed to the manager of the telegraph office. A telegram is sent to him giving the numbers of messages to be expected on a given train, and this he acknowledges. Receiving the telegrams, he delivers them in the usual manner, and many of the recipients never notice but what the message came by wire. There may be some objection to leaving it to the discretion of the telegraph manager to send telegrams by train, but in more than a year we have had only a few complaints on this ground. The telegraph department assumes responsibility for the delivery of the messages. If the envelope should be carried by, the telegraph manager would at once report the fact; and in such case the sending office, having the duplicates, sends them by wire. In more than a year we have had only five cases where messages were carried by.

Large numbers of reports covering the movement of fast

*Abstract of a paper read before the annual meeting of the Association of Railway Telegraph Superintendents at Rochester, N. Y., June 22.

freight, formerly sent by wire, are now sent by train. This policy is followed at all offices within a radius of 400 miles of headquarters.

THE VALUE OF PUBLICITY FOR RAILROADS*

By Oswald Garrison Villard
President of the New York Evening Post

As the son of a railroad president, the completer of a great transcontinental line [the Northern Pacific] it gives me much pleasure to address this gathering of railroad men. I was but 11 years old when it was my good fortune to travel on one section of the first through train between St. Paul, Minn., and Portland, Oregon; but nothing in all my life stands out more clearly than the events of that wonderful journey. That was a triumphal progress which was celebrated in every town along the line. Ours were honors rarely accorded even to a President, or a conqueror returning from the scene of his victory. No hamlet so humble but had its decorations and its parade. No state but offered its official hospitalities to the men who had forged that iron bond between East and West, who had conquered apparently insuperable barriers. It was the birth of an empire that we celebrated and those that officiated thereat were welcomed as among the greatest benefactors of their times. I dwell upon this occurrence of 32 years ago not to blow the trumpet for the men who did this wonderful thing, but to recall to your minds what was the attitude of the public towards railroad men in that day. How rapidly the scene changed! Within a decade everybody had forgotten all that acclaim and praise and all the promises of everlasting gratitude. We began to hear murmurings from press and public that all was not well; then came suspicion and accusation. Next a torrent of abuse and lo! we had swung directly to the opposite extreme and the railroad man had become a public enemy.

Now it is undeniable that the railroads themselves were in large part responsible for this revolution; not only because some of them have even until this date stuck to practices never in themselves justifiable, but also because they failed to realize that all our business conditions were undergoing a sea-change; that the day of unlimited freedom from governmental control was at an end and that the era of regulation, for better or for worse, was at hand. . . .

It is not my purpose to award praise and blame for all that has gone on during these years of tribulation. I am merely here to urge upon you one remedy for existing conditions, one already partly tried and found successful, but one that has only just begun to do its beneficial and efficacious work. That remedy is publicity. From my double point of view of an editor and as one who grew up in an atmosphere of great railroad achievements, that seems to me the truest and best way to right wrongs and to end intolerable conditions.

Primarily, of course, publicity can be of value to the railroads only if they have nothing to conceal. The railroad manager who would profit by wise publicity must believe in it sincerely and then be perfectly willing to let daylight play upon any part of his and his company's activities. This presupposes the abandonment of the old secret chamber and the old method of affecting public opinion through controlled newspapers and the influencing of public officials, legally or illegally, properly or improperly. . . .

It was not only from the common legislative striker that the railroads suffered. There is even one historic case where a President of the United States demanded free transportation by special train across the continent for himself, his official following, and a large party of newspaper men carried with him to exploit his triumphal tour. In this trip some $75,000 of the stockholders' money was paid out because the railroad did not have the good sense and the nerve to say no to some of the demands of its guest, or to go to Congress and demand reimbursement. . . .

*Extracts from an address before the 37th Semi-Annual Dinner of the American Railway Guild, New York City, May 18.

The value of the advertising columns has been as little understood as the legitimate opportunities offered by the editorial and news pages. Such clever advertising as "Phoebe Snow" has appeared only occasionally.

A railroad which advertised with us withdrew its advertising when we faithfully reported the complete breakdown of its service one cold winter. . . . The obvious procedure, if our statements were untrue, was to have called us publicly to account, either through the courts of law or by demanding that the railroad's case be printed in full; or if we refused, then in newspapers of much larger circulation, or by inserting advertisements setting forth the facts. But the railroad sought refuge in silence and alienated its patrons by a refusal to give them information to which they were clearly entitled.

Very satisfactory has been the change by some railroads from the old-fashioned press agent, often merely a lobbyist and go-between, to so able and useful a type as Ivy L. Lee, long connected with the Pennsylvania Railroad, whom it was always a pleasure for editors to see. Even more striking evidence of the change in railroad sentiment has been the advertising campaign conducted in various states against the two-cent fare law and the outrageous extra-crew statutes. If those campaigns were not as successful as they should have been, the policy is none the less the correct one. Incidentally, the railroads have discovered that they have, themselves, enormous opportunities for legitimate publicity which they have never heretofore utilized, such as dining car bills of fare, the usual advertising folders, timetables, and the station bulletin boards. Unquestionably the use of these has had considerable to do with the marked improvement in the relations of railroads and the public and the courts, now so striking as to make it possible to say that the current of popular opinion has again begun to run in the railroad's direction. Even more striking is the campaign for fair play which has been carried on by President Elliott, of the New Haven Railroad since he took up his present task. I have never been able to understand why railroads that were playing the game squarely have not each taken a man like Mr. Lee, made him vice-president, and told him to do nothing else than to be a link between the press, the public and the railroad. If a high official were to appear occasionally at the small towns along the road and make friendships among the business men and show the railroad's interest in that town, and its desire to co-operate and to give a better and better service, there would speedily be stored up a reservoir of good-will and friendliness upon which the railroads could draw large drafts in time of need. Such a man would find that honest editors are not inaccessible, that they do not want to be dined or wined or kow-towed to, but that they can be influenced by the railroads precisely as anybody else can influence them and get their support, namely, by the presentation of facts and arguments. If such an official could not convert editors he could not convert the public. It is gratifying to record that other railroads beside the New Haven are beginning to move along these lines.

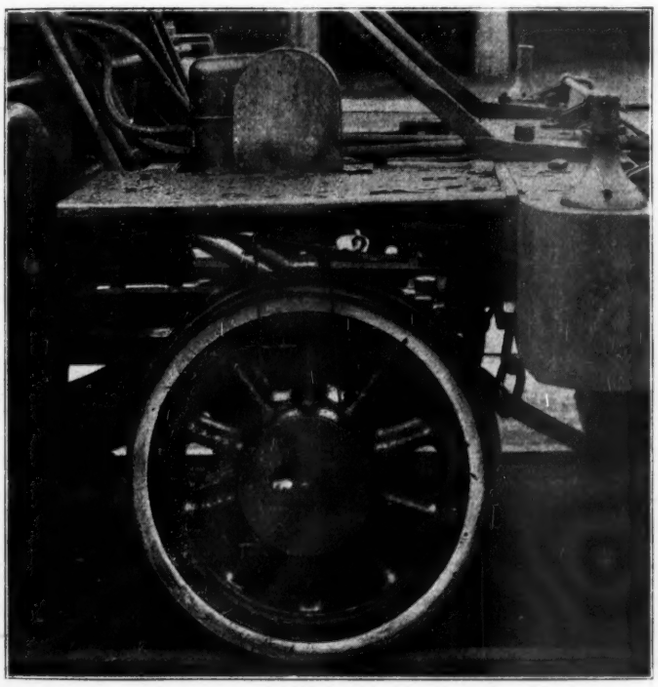
The railroads need the newspapers not only for protection against unjust laws, but because they are the best possible defense against the growing danger of labor-union aggrandizement on the one hand and government encroachments on the other. Few newspapers, like the Evening Post, are non-union; hence they are themselves deeply sympathetic sufferers at the hands of labor union extortionists, save where, as in New Orleans, they have at the risk of their existences and at a very heavy cost, thrown off the yoke. The railroads should realize that the newspapers of conscience and character are their chief allies, just as they should know that the greater the freedom and the independence in criticism which a newspaper shows the better it can serve their just interests. The public knows a mealy-mouthed organ, afraid to say its soul is its own, and cares little about its opinion. One has only to consider the agitation for government ownership now going on to realize the vital necessity that exists that the relations of the railroad and the newspaper should be put on the highest possible plane of mutual good-will, respect, and honorable co-operation. . . .

The Julian Train Control and Automatic Stop

A Description of the Demonstration Made on the Queen & Crescent and of the Equipment Required

The first public demonstration of the automatic train control and cab signal system of the Julian-Beggs Signal Company, Terre Haute, Ind., was given on the Queen & Crescent on May 18, to officers of that road and a number of invited guests. The demonstration also covered the speed control system which this company has developed, an installation on the private car of General Manager H. Baker being used for this test. The speed control system was described in the *Railway Age Gazette* of March 16, 1915.

As mentioned in the previous article, the speed control instrument is belt-connected to an axle. It has a series of contact segments arranged for any desired series of predetermined speeds, and a dial switch, on which is set the desired limiting speed. A series of platinum points are moved up and down over the contact segments by the piston of the recorder, which is raised as the speed increases. As these platinum points rise above the segment corresponding to the speed indicated on the dial switch, the normally closed circuit through a solenoid magnet holding closed a valve in the air-brake train line or in a connection from the equalizing tank is broken, allowing this valve to open and the air to escape to the atmosphere, thereby setting the brakes. As the speed of the train is reduced the platinum points again make contact with the segments, completing the circuit, energizing the magnet, and closing the air valve.



Speed Recorder on the Locomotive

The train control and cab signal system utilizes a similar speed recorder and air valve in connection with a roadside contactor and a third rail to control the speed of the train automatically, depending on the condition of the track ahead, and also to give the enginemen distinctive clear, caution and stop signals in the cab. This system, as developed at present, requires the following equipment: On the locomotive, a 12-volt storage battery, three standard relays, a light-signal with three lenses, a speed recorder mounted on the pilot and belted to one of the axles of the front truck, an electro-pneumatic valve connected in the air brake line from the equalizing tank, a push-button release for closing the engine circuit after the train has been stopped, a commutator on the reverse lever to change the wiring connection when the engine is to be run backward, and an armored conduit with the necessary junction boxes, for connecting the wiring on the cab to the tender; on the tender, two curved shoes attached to the journal boxes of the forward truck on each side, and mechanical circuit breakers with horizontal arms, also attached to the truck on each side; and on the roadside, a contactor box attached to the ends of the ties on each side of the track; one rail, about 6 ft. long, about 2 ft. outside the running rail and supported by brackets on the ends of the ties at a proper height to engage the circuit breakers on the tender; a 16-volt battery at the signal location, and the necessary line wire and trunking to connect the battery, the track relay and the track contactor box.

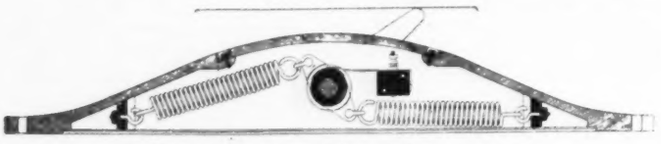
The section between Erlanger, Ky., and Crittenden, 18 miles, on which this train control system is installed, is equipped with three-position, a.c. upper-quadrant automatic block signals, controlled by three-position, polarized track relays. As these relays have one contact which was not in use, it was utilized for the control of the cab signal and automatic stop system. While this is a double-track line, only the southbound track is equipped with this system, 18 blocks being installed. The track contactors are located about 600 ft. north of (in the rear of) the signals in each case in order to allow an engine running at the caution speed to be stopped automatically by the device before passing a stop signal.

The complete circuits on the roadside and on the engine and tender are shown in the accompanying sketch. In the position shown, the engine is approaching a proceed signal, two blocks in advance being unoccupied. When the engine shoe strikes the track contactor the circuit is completed from the roadside battery through the front contact of the track relay, the track contactor, engine shoe and coil of the clear relay, to ground. This picks up the clear relay, completing a stick circuit from the engine battery through the two circuit breakers, the first back contact on the caution relay, the first front contact on the clear relay and the coils of this relay, to ground. Current can then flow from the engine battery through the second front contact of the clear relay, the upper contact segment on the speed recorder, the dial finger moving over this segment, the solenoid actuating the air valve, and back to ground.

The length of the contact segment can be adjusted for any desired speed, 48 miles being used on the Q. & C. installation. As soon as the speed exceeds this rate, the dial finger passes off the end of the segment, the circuit is broken and the brakes are applied through the de-energizing of the air valve magnet. As soon as the speed has been decreased to a point below a specified limit, the circuit is again comp'eted, and the brakes released. After passing a clear signal and until the next track location is reached, the white light burns, as it is included in a circuit from the engine battery through the third front contact of the clear relay, to ground.

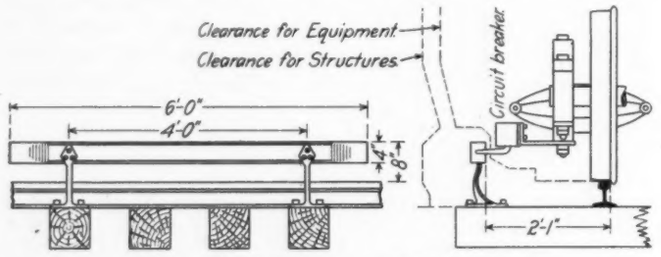
The function of the third rails, not shown in the wiring diagram, is to break the holding circuit on the engine by engaging the horizontal arm of one of the circuit breakers, shown above the engine shoes. The breaking of this circuit de-energizes any relay that may be energized at the time, and puts out any of the lights that may be burning. This prevents any indication from being carried improperly into the next block without the proper control from that block. If

the next two blocks are clear after the circuit is broken, the circuits previously described are again established and the train continues at full speed. If, however, only one block in advance is clear and the signal 600 ft. ahead is at caution, the polarized track relay will be reversed, allowing current from the roadside battery to flow through the back contact of the track relay, the track contactor on the opposite side, the engine shoe, the coils of the caution relay, and back to ground. The pick-up of the caution relay closes a stick circuit from the engine battery, through the two circuit breakers, the first



Sectional View of Track Contactor

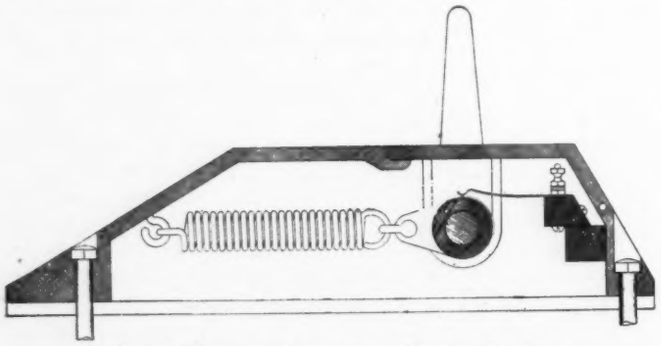
front contact and the coils of the caution relay and back to ground. Until this circuit is broken by the next third rail, therefore, current flows from the engine battery through the second back contact of the clear relay, the second front contact of the caution relay, the second contact segment on the speed recorder, the dial finger, air valve solenoid, and to ground. The length of this contact segment is adjusted for the desired caution speed, which in this installation is 25



Side and End Elevations of Contact Rail

miles an hour. If that speed is exceeded, the brakes are automatically set; and again released as soon as the speed has decreased below that rate. Also throughout this block the green light burns, being in a circuit from the engine battery through the third back contact of the clear relay and the third front contact of the caution relay.

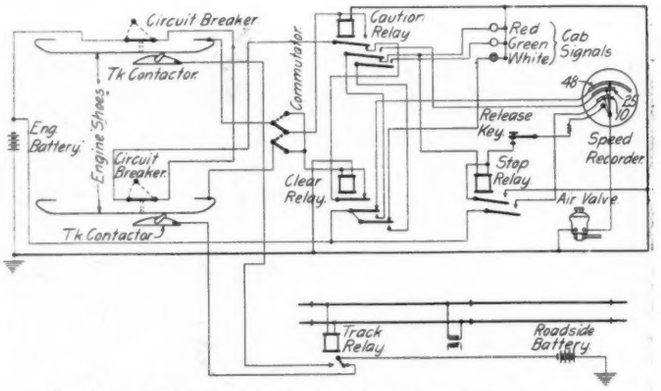
When the train approaches a stop signal, the block ahead being occupied, the engine circuits are broken by the circuit breaker as described above, and as the track relay is de-



Circuit Breaker Mounted on Tender Truck

energized, the circuit from roadside battery to engine cannot be completed when the engine shoes pass over the track contactors. This de-energizes the solenoid holding the air valve closed, exhausts air and applies the brakes; and as there is no circuit through the speed recorder, the train is brought to a full stop. When it has stopped, the dial hands on the speed recorder will have made contact with the fourth segment, allowing the circuit through the air-valve solenoid to be closed by operating the release key. In this case the current flows from the engine battery through the second back contact of the clear relay and the second back contact of the caution relay, the coils of the stop relay, release key, speed recorder, air valve magnet, and to ground. As soon as the stop relay is picked up by closing the release key, the stick circuit through the coils and the first front contact of this relay is completed, and also the circuit from battery through second front contact of the stop relay and the third contact segment on the speed recorder. This segment is arranged to allow a speed of 10 miles an hour until the next indication is received.

The air valve in this system, which has been worked out in connection with the Westinghouse Air Brake Company, has an opening of 3/8 in. to the atmosphere, causing a reduction of brake line pressure of 12 lb. to 15 lb. An auxiliary or pilot valve has also been developed for use on a freight locomotive, or in a caboose in connection with the speed control system, having a maximum opening of 1¼ in., which, however, by a manual valve in the head, can be reduced to secure the desired opening for use on shorter trains. In this valve



Track and Engine Circuits, Julian Train Control System

the electro-pneumatic pilot valve controls a balanced type air-controlled valve opening the air line.

In the demonstration referred to above, a special train was run from Ludlow, Ky., to Williamstown, and return, the train control system being in operation between Erlanger and Crittenden, 18 miles, and the speed control system being demonstrated over the remainder of the run. A freight engine with two cars was sent ahead of the special train with orders to stop at intervals, and the special was run as close to it as possible under the control of the automatic system. The system operated correctly in every instance. The party included H. Baker, general manager, Queen & Crescent; W. S. Andrews, general superintendent of transportation; W. T. Caldwell, superintendent; C. E. Rickey, superintendent of terminals; W. H. Dooley, superintendent of motive power; D. M. Case, superintendent of signals; C. F. Jones, supervisor of signals, and W. S. Melton, superintendent of telegraph; John E. Beggs, president of the Julian-Beggs Signal Company; M. R. Julian, the inventor, and M. H. Hovey, the company's signal engineer.

New Railway Lines in Belgium.—It is reported from Amsterdam that at many places the Germans are sonstructing new railway lines. A new line has been laid from Aix-la-Chapelle through the Belgian village of Wonck, in the Jeker valley, with the object of giving further railway access to Brussels. This line crosses the Maas near Visé. The line from Selzaete to Moerbeke is to be double tracked and probably also the Selzaete-Eecloo-Bruges line.

Some Important Considerations in Right of Way Valuation

A Discussion of the Principles of Valuation That Should Govern in the Selection of Right of Way Multiples

By Halbert P. Gillette
Consulting Engineer, New York, N. Y.

Ever since the decision in the Minnesota rate case there has been concern among railway officials and appraisers over the apparent exclusion of right of way multiples. For the purpose of this discussion we may define a right of way multiple as the factor by which the ordinary selling price per acre of land must be multiplied to get the acreage price paid for it when taken for public use under the exercise of the right of eminent domain. The use of a right of way multiple, therefore, is a convenient method of estimating severance damages, special value for railway purposes, etc., and it may even be taken to include overhead costs involved in securing the right of way.

The testimony in favor of right of way multiples failed to convince Justice Hughes. I believe it failed for two reasons: First, because a "right of way multiple" was treated, and even spoken of, as a "hold up factor"—a sort of piratical tax which, as Justice Hughes said, should not be recognized in a court even though it may exist as a fact; second, because the whole theory of reproduction cost of right of way was based on an untenable hypothesis, involving the absurdity of assuming the existing railway to be non-existent in order to conceive the cost of buying the existing right of way.

My object in this paper is to outline briefly a tenable theory of right of way valuation that can not be criticized adversely without abandoning all existing theories of commercial valuation. To do this I will first discuss the fundamental theory of land values. Then I will show how the general theory can be simplified for ordinary application to railway right of way valuation. Finally I will outline the elements of value that go to make a right of way multiple.

The value of land is the capitalized prospective ground rental derivable from it. Ground rental is measured by the economic advantage in position and in mineral and other marketable content of the given land, contrasted with land that barely pays operating expenses. Since the days of Ricardo there has been no serious dispute on this economic generalization. All land and all land entitles, such as coal, natural gas, water, etc., can be valued in no other way than by capitalizing the excess of their income over that obtainable from land that yields nothing in excess of actual operating expense plus fixed charges on the buildings and plant. Once this fact is clearly grasped, the proper methods of determining the value of land and land entitles become evident.

It may be said that the best test of land value is the price at which it sells in an open market. This is ordinarily true where there are frequent sales in a market and where the land is sold for the use under consideration. But even in such a case the sales are based on capitalized prospective rental, so that, in the final analysis, we come back to land income as the basis of land value.

In a very interesting pamphlet entitled The Valuation of Railroad Right of Way, Frank W. Stevens, special counsel for the New York Central, offers some suggestive thoughts as to the special value that attaches to right of way. He also cites many court decisions showing that land taken by condemnation must be valued upon its most advantageous prospective use. Two facts seem to be legally established: (1) That land may have a *special value* for particular purposes (such as reservoir sites, rights of way, etc.) and that this special value is recoverable by the owner where the condemnation occurs. (2) The consequential damages to the owner are also recoverable.

Let me first indicate how the value of land for special purposes is ascertainable. The following rules are perfectly general, and apply equally to a reservoir site, a railway right of way, a farm, or a city lot:

(1) For a given use the value of a given piece of land, A, exceeds that of the next available piece of land, B, by the capitalized difference in their respective *net earnings* after deducting therefrom the interest, depreciation and taxes on the buildings and plant used in production, as applied to that use.

Expressed algebraically this rule is:

$$V - v = \frac{(G - E) - (g - e) - (F + f)}{r}$$

In which V and v = values of the two land parcels.
G and g = gross earnings of same.
E and e = operating expense.
F and f = fixed charges (interest, depreciation and taxes) on buildings.
r = interest rate suitable to express normal return.

(2) If the gross earnings of the two pieces of land, A and B, are identical, then the value of A exceeds B by the capitalized difference in their respective *operating expenses* after deducting therefrom the interest, depreciation and taxes on the buildings and plant used in production; or

$$V - v = \frac{e - E - (F + f)}{r}$$

(3) If the gross earnings and investment in buildings and plant are identical for A and B, then the value of A exceeds B by the capitalized difference in their respective operating expenses; or

$$V - v = \frac{e - E}{r}$$

(4) If the gross earnings, the investment in buildings and plants, and the operating expenses for A and B are identical, then the value of A equals the value of B, or the *value* of an owned piece of land, A, is ascertainable by determining the *cost* of securing an alternative piece of land, B; or V = v.

As I conceive it, this last rule (4) is the one that a railway should ordinarily seek to apply in measuring the value of the right of way that it owns. Yet no such rule was presented to the Supreme Court in the Minnesota rate cases. Instead, the court was asked to conceive the existing railway plant as non-existent and then to conceive what it would cost to *reproduce the existing* right of way. Confronted with such an impossible hypothesis Justice Hughes said:

"Moreover, it is manifest that an attempt to estimate what would be the actual cost of acquiring the right of way, if the railroad were not there, *is to indulge in mere speculation*. . . . The values of property along its line largely depends on its existence. It is an integral part of the communal life. *The assumption of its non-existence,* and at the same time that the values that rest upon it remain unchanged, *is impossible* and cannot be entertained."

Here we have an admirable illustration of the losing of an important point in a case almost entirely as a result of an incorrect theory of valuation. Suppose, instead of presenting to the court the hypothesis of non-existence of the railway, the court had been asked to consider the probable cost of securing right of way for a railway parallel to the existing railway, could the court have rejected such a proposition as "mere speculation" or "impossible"? The facts are that many a right of way has

been purchased under just such conditions, hence the assumption is not speculative or impossible. Moreover the test of *value* of A that is had by ascertaining the *cost* of securing an alternative, B, is a test that every man is accustomed to apply. The man who is intending to buy a city house and lot applies such a test repeatedly. Our rule (4) above given, is precisely such a test of value, as, in fact, are also the more general rules (1), (2) and (3).

If we approach the question of right of way value from this logical point of view, we can show at once that not only must there be paid the farm acreage price for farm land contiguous to the existing railway, but a considerable sum in addition to cover consequential damages. Also it can be then shown that land purchased at "retail," in small parcels, such as are bought for right of way, costs more per acre than land purchased "wholesale," as in buying an entire farm. Picturing, then, the process of buying a right of way approximately parallel to the existing right of way, we see at once that the following elements affect the purchase price:

(1) Severance damages resulting from the severance of associated parcels of land that can be more economically operated as a whole than in segments.

(2) Incidental damages resulting from noise, smoke, shutting off of view, etc., as a result of building a railway near places of habitation and business.

(3) Loss of income to the land owner during the period required for him to move to a new site and to establish a business equal to that lost as a result of being compelled to move.

After the purchase of the right of way is effected there comes not only the cost of removing existing buildings, but the loss of value of these buildings which were paid for by the railway. Where right of way is purchased through urban and suburban property, it is not merely the value of bare land that is involved, but also that of buildings and improvements. Although this is quite evident the moment we adopt the theory of testing the value of an existing right of way, A, by estimating the probable cost of a parallel right of way, B, it is not evident when the theory of wiping out the existing railway is adopted.

To sum up, a proper right of way multiple must provide not only for all consequential damages to the owner of the property, but must also provide for the value of buildings and improvements and the cost of removing them from the right of way.

I agree with Mr. Stevens that a railway right of way possesses value because of its superior economic location. There really can be no question on this point. Wellington's entire book on the economics of railway location is an exposition of the value of a given location as determined by capitalizing the profits securable from it. Part of the differences in value between different locations is attributable to the skill of the locating engineer, but the largest part is inherent in the topography and the productive character of the country. The question for the courts to decide is this: To whom belongs the right of way value due to its superior economic location? Is it the property of the public or the property of the railway? The value of the right of way is deducible by the rules above given.

Right of way values are analogous to water right values, particularly in that both depend largely upon topography. In deciding adversely to the contention that water rights possessed value for rate-making, it was held by the lower courts in California that capitalizing profits to ascertain value of water rights constituted circular reasoning, and water right values thus ascertained were therefore rejected. But the United States Supreme Court has recently reversed this decision, holding that water rights must be valued and included in the total value used as a rate making base. I see no cardinal difference between such a decision and one that would affirm that a railway is entitled to all the special value that inheres in its right of way by virtue of its economic location. Water rights possess value because of their economic location, and if this value is to be considered as part of a rate making value, wherein does it differ in principle from allowing a similar value due to the economic location of a railway right of way? If there is a difference, and if an economic railway location of right of way has no special value to be allowed in rate making, what becomes of the logic of the decisions relating to special value cited by Justice Hughes in his Minnesota decision? In fact what real meaning is there in his own language when he says:

"If, in the case of any such owner, his property had a *peculiar value or special adaptation for railroad purposes,* that would be an element to be considered."

There can be no "peculiar value or special adaptation for railroad purposes," except a value based on the capitalized excess net income securable with the given right of way as compared with some alternative right of way. Therefore, if we properly interpret the decisions of the Supreme Court itself, we find ample justification for applying rules (1) to (4) above given.

When railway and public service commissions assert that it is always untenable to establish any sort of value for rate making by capitalizing any sort of income, they go directly counter not only to court decisions but to their own decisions in every case where *land* value is involved. What, indeed, is the acreage value of a farm if it is not capitalized income? Yet the same commission that unhesitatingly allows a right of way value based on farm acreage price, will contend that it never capitalizes any income in establishing a rate making value, because that would involve circular reasoning!

Brooks Adams, in the Spokane Rate Case, unsuccessfully attempted to prove that every railway company has been a trustee or agent, and as such should be held accountable for all past transactions. Not only has the Interstate Commerce Commission rejected this theory of *past* agency relationship, but so has the Supreme Court. Justice Hughes was particularly emphatic on the point when he said:

"As the company may not be protected in its actual investment, if the value of its property be plainly less, so the making of a just return for the use of the property involves recognition of its fair value if it be more than its cost. The [railroad] property is held in *private ownership*, and it is that property, and not the original cost of it, of which the owner may not be deprived without due process of law."

Had the agency theory been sustained, the actual cost of right of way and not its present value would have been prescribed. The instant the agency theory as to past relations is thrown out, there remains no other way to appraise right of way than as private property owned by the railway. This would inevitably result in giving to a railway the full special value inherent in its lands as essential parts of an economic transportation plant.

EDUCATING THE PUBLIC TO BUY TICKETS

The Illinois Central and the Yazoo & Mississippi Valley are conducting a campaign to secure the co-operation of the public in purchasing tickets before boarding trains, to eliminate the practice of paying fares on trains. Some time ago a pamphlet was issued by T. J. Foley, general manager, addressed to the people of Mississippi, giving the reasons why the convenience of the entire public would be best served if people would take pains to purchase tickets beforehand. On June 1, Mr. Foley issued a circular addressed to all agents and passenger conductors on this subject, as follows:

"When it can reasonably be avoided, passengers should not be permitted to get on trains without tickets. One of the principal reasons that some passengers continue paying fare on the train is because it is an "old custom," not because it is more convenient for them.

"Collecting cash fares, consulting tariff book, making change and issuing receipts for fares detracts the attention of the conductor from very responsible duties; therefore, it is better for the passenger, for the employees and for the railroad companies to work out a system whereby passengers will no more think

of getting on a train without a ticket than they do of going into a theater, circus, baseball game or many other places without a ticket.

"Beginning June 1, 1915, these companies will inaugurate a thorough campaign to secure the co-operation of the public so that, after they have decided to make a trip, their first thought will be to reach the station in time to provide themselves with tickets. There are some points where a ticket agent is not located; other places where ticket agent is not on duty for night trains, and there will also be extreme cases where a passenger reaches the station at the last minute to board a train which it would not be advisable to delay long enough to enable passenger to purchase a ticket. In such cases it will, of course, be necessary to make collection on the train.

"It is fully appreciated by the management that it will take considerable time and patience to impress upon the patrons and also upon employees, that in nearly every case the "old custom" of paying fare on trains instead of at ticket office can be eliminated.

"With the hearty co-operation of agents and trainmen, these companies have been able to overcome many undesirable practices, such as excessive loss and damage to freight and baggage, damage to livestock on right of way, unwarranted overtime in train and station service, and have also materially reduced accidents of every description; all of which has led us to believe that you will enthusiastically assist in the elimination of the practice of passengers getting on trains without tickets, which has proven very detrimental to both the companies and their valued employees.

"To accomplish the desired results will be a huge task for the station masters, ticket agents, and passenger conductors and trainmen. Recognizing this, I have directed division officials that special attention must be given this subject, soliciting suggestions from agents and passenger conductors as to whether or not additional facilities are necessary, if more help is needed, or concerning anything which in their opinion might be of assistance in speedily making it known to the public that, from every viewpoint, it is preferable that they purchase tickets from the agent rather than pay on the trains.

"To be successful in this movement, it is essential that the employees be in hearty accord with it, and in explaining to the public that they should have tickets before boarding trains they do so in the most courteous manner. You are asked to bear in mind that it is not the intention to annoy or inconvenience those patronizing our trains, neither is it desired to attempt to make it compulsory in every case for passengers to have a ticket before getting on trains at points where ticket offices are open. In attempting to make it compulsory, you would no doubt encounter an occasional person who would feel that his rights were being imposed upon, and argue that it is one of his prerogatives to decide for himself where he will pay his railroad fare. However, I am thoroughly convinced that it will only be an occasional patron who will take this stand, and such a patron will no doubt have personal reasons for endeavoring to avoid purchasing a ticket.

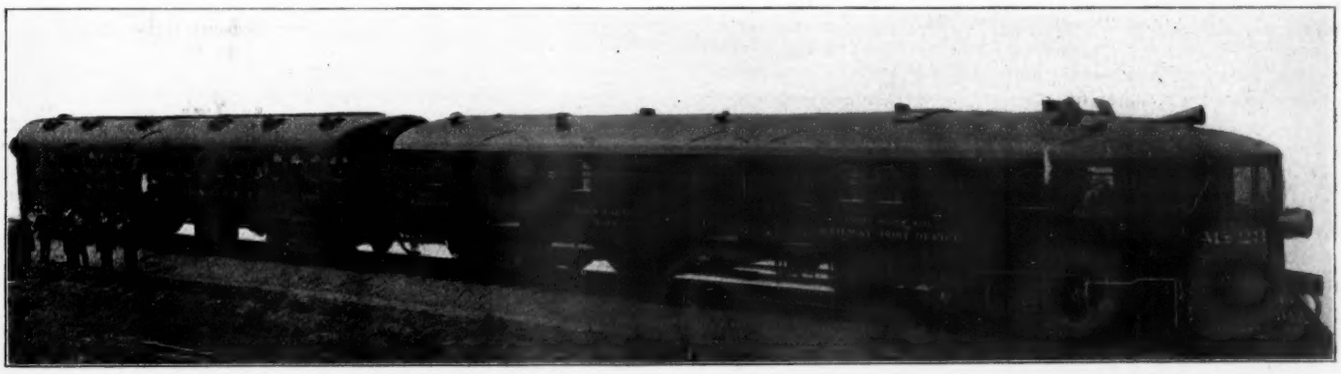
"On branch line trains and main line local passenger trains, the conductor will use his own judgment in holding the train at a station for a minute or two if necessary in order to enable passengers who are not familiar with the requirements, and who attempt to board train without tickets, to provide themselves with same."

GASOLENE MOTOR MAIL AND BAGGAGE CAR

A gasolene motor mail, baggage and express car has recently been built for the Union Pacific by the McKeen Motor Car Company, Omaha, Neb. It is 70 ft. long, has a wheel base of 44 ft. 2 in., and is equipped with a motor of sufficient power to permit hauling a standard steel railway coach as a trailer. The arrangement is the conception of officers of the Union Pacific, developed with the purpose of providing greater facilities for handling branch line passenger traffic than are possible with single unit motor car trains.

The body of the motor car back of the engine room is divided into two compartments; a mail compartment 15 ft. long and the baggage and express compartment 38 ft. 3⅜ in. in length. The trailer car has a seating capacity of 78 passengers. The motor train will go into service between Kearney and Stapleton, Neb., a distance of 103 miles, where it will make a round trip each day, displacing a steam train consisting of three cars and a locomotive. The seating capacity of the steam train is 70 passengers, the advantage in seating capacity thus being with the motor car train.

The 300-hp. reversible engine truck in use on the motor car is known as type D, and is an enlargement of the builders' latest model type C truck, rated at 200 hp. The engine is reversed by compressed air, the control of which is placed on the right side of the engine near the throttle and brake valve, thus enabling the motorman to operate the car without leaving his seat. The motor truck has a wheel-base of 10 ft. and carries a weight of 33,800 lb. on the drivers. The maximum tractive effort is 8,200 lb. The car is said to have made a speed of 55 miles an hour on its initial trip.



Union Pacific Gasolene Motor Train for Branch Line Service

ENGLISH RAILWAYMEN'S NEW DEMAND.—The secretary of the National Union of Railwaymen has announced that the society has decided to apply for a revision of the agreement entered into in February with the railway companies on the question of war bonuses for the operative grades of railwaymen. The present agreement, which was made for a period of three months, and which was then to be subject to review, provided a war bonus of 3s. (75 cents) a week to men earning less than 30s. ($7.50) and 2s. (50 cents) to those whose wages were above that amount. It has already been announced that the executive committee of the Associated Society of Locomotive Engineers and Firemen has also decided to ask for an increased bonus.

General News Department

The arbitration board of Massachusetts has awarded the 4,000 employees of the Bay State Street Railway Company an increase in wages for conductors from 24.5 cents to 30 cents an hour, and has granted a minimum wage of $2.25 a day to all other employees, and these other employees' hours of labor are reduced from 59 to 54 weekly without loss of pay.

Discussion has been going on for some time between the representatives of the freight clerks on the New York, New Haven & Hartford and the management, and a strike was threatened last week. While no official announcement has as yet been made by the employees, it is understood that both sides to the controversy have agreed to accept mediation, and that G. W. W. Hangar, assistant commissioner of the United States Board of Mediation and Conciliation, is to act as mediator.

J. P. Morgan & Co., New York, have made the following announcement: "The Rothschilds in Paris have arranged to borrow in this market for a period of one year a considerable amount of money, the proceeds of which the Rothschilds will make available to the French government here for the payment of its commercial obligations in this country. The loan will be secured by high grade American railway bonds to be lodged with J. P. Morgan & Co. in New York. It is impossible to state at this time the amount of the loan."

The Western Rate Case Arguments at Washington

On Tuesday, June 22, the series of final hearings in the Western rate advance case was begun before the Interstate Commerce Commission at Washington, D. C. Tuesday was largely taken up by opening statements made by C. C. Wright, representing many of the roads, and Clifford Thorne, representing state railroad commissions.

Legislation in Illinois

The Illinois legislature, which has just adjourned, passed three laws to regulate railroads, a bill requiring all railroads to provide emergency chests for first aid to the injured on all trains, an amendment to the workmen's compensation act, applying its provisions to transportation companies, a bill amending the public utilities act to permit railroads or transfer companies to give or sell transportation to newspapers or magazines in exchange for advertising, and to issue free or reduced transportation to mail carriers, policemen and firemen, and members of the general assembly.

New Railroad Laws in New Hampshire

An act has been passed by the legislature of New Hampshire, to go into effect on October 1, 1915, requiring that all railroads transporting lumber within the state, which is loaded therein, shall equip cars with stakes and wire, when needed, details to be regulated by the Public Service Commission.

A law was passed requiring towns to erect signs at the approach to railroad grade crossings, as noted elsewhere in this issue.

Crossing Signs Maintained by Towns

In New Hampshire the highways throughout the state are being fitted out with signs at the approach to railroad crossings indicating the distance, in feet, to the crossing; and, in accordance with an act of the legislature, the work promises to be entirely finished by August 17 next.

The Public Service Commission started this movement last year and induced a considerable number of cities and towns to put up the signs; and, to make the matter uniform, secured at the last session of the legislature a special act specifically putting this duty on the cities and towns with a penalty of $1 a day for neglect in each case.

By an order of the commission the signs must be of enamelled metal with white letters on a dark blue background, the size of the sign to be 24 in. by 12 in. The sign is to be put up not less than 300 nor more than 500 ft. from the crossing; but the Public Service Commission has authority to suspend this and other regulations where it may be desirable to make an exception to the rule.

Grade Crossing Accidents Classified

The Long Island Railroad operates a heavy passenger traffic in a level country, near a large city. The frequency of highway crossing accidents in the territory of that company has long been noticeable. General Manager J. A. McCrea has published a statement showing that in the 4½ years since January 1, 1911, there have been 507 of these accidents. In that period 40 persons were killed and 111 injured, for none of which casualties the railroad company was responsible. Of the people killed 24 were in automobiles, 12 in wagons and carriages and 4 on bicycles and motorcycles. In 42 of the 507 accidents no person was injured. In 157 cases automobile and wagon drivers defiantly ran their machines and vehicles through lowered gates.

Mr. McCrea is urging the state of New York to follow New Hampshire in requiring every city and town to maintain warning signs on highways approaching crossings. (See article above.) He calls attention to the fact that the railroad cannot maintain signs at a distance from a crossing, nor has it the right to erect them.

The new signs of the Long Island road have been noticed in these columns. Mr. McCrea says: "We want to go 'Safety First' one better, and make it 'Safety First, Last and Always.' About 300 of our 600 grade crossings are protected by flagmen and gates, and we are spending at the present time $25,000 a month to protect these crossings."

New Subways Opened in New York

New York City has opened two subways this week; the Fourth Avenue subway, so-called from the Manhattan bridge southward through Brooklyn, about three miles toward Coney Island; and the Steinway tunnel from Forty-second street, Manhattan, under the East river to the borough of Queens. This last mentioned tube was finished about eight years ago, but has remained unused because of disputes about ownership and operation. It will be operated by the Interborough Rapid Transit Company with free transfers to and from the existing subway of that company running north and south in Manhattan. The Fourth Avenue subway, Brooklyn, will be operated by the New York Consolidated Railroad Company, which is controlled by the Brooklyn Rapid Transit Company. For the present the Fourth avenue trains will run to Coney Island over the Sea Beach Railroad, but eventually will have a connection with elevated lines running through New Utrecht avenue and Gravesend avenue.

Credit Where Credit is Due

The poem published on page 1377 of the Daily *Railway Age Gazette* of June 16, entitled "The Lament of the Foreign Bad Order Empty Car," which was read by Secretary Taylor at the Master Car Builders' convention at Atlantic City as anonymous, was written by E. E. Betts, superintendent of transportation of the Chicago & North Western and included by him in a series of bulletins issued to the members of the Chicago General Superintendents' Association by the committee on the Promotion of the Proper Handling of Equipment, of which Mr. Betts is chairman, for the purpose of calling atention to some of the methods in vogue for handling bad order cars. Mr. Betts says he is not so anxious about credit for his authorship as he is that somebody shall pay some attention to it. "It was reported as an amusing communication," he says, "all of which may be true. At the same time it was hoped that the moral would sink into some of our head mechanical men who would be aroused as to the necesity of taking some action to put a stop to the wanderings of the aforesaid foreign bad order empty cars."

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF APRIL, 1915

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses							Net operating revenue (or deficit).	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance										
		Freight.	Passenger.	Total, inc. misc.	Way and structures.	Of equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.				
Atlanta, Birmingham & Atlantic	639	$168,899	$31,767	$221,295	$34,278	$40,059	$11,323	$95,819	.....	$10,737	$192,216	$29,080	$13,100	$15,980	$15,358
Chicago, Rock Island & Pacific	7,852	3,279,151	1,275,401	4,921,460	588,691	837,990	145,519	2,041,708	$42,341	141,524	3,796,941	1,124,519	283,788	840,404	230,433
Kansas City, Mexico & Orient	740	140,698	24,719	174,986	54,873	38,364	8,441	85,848	.....	9,807	197,333	—22,347	9,000	—31,347	.....
Oahu Railway & Land Co	109	62,486	19,805	89,933	8,611	7,399	654	21,301	.....	3,438	41,403	48,530	7,152	41,378	645
St. Louis, San Francisco & Texas	235	57,711	18,584	82,544	21,790	14,184	2,295	42,977	.....	3,853	85,098	—2,554	1,216	—3,770	8,814
Ulster & Delaware	129	66,016	14,939	94,654	9,331	17,221	1,036	35,381	60	2,777	65,805	28,849	3,300	25,628	4,981
Vandalia	910	598,418	173,409	864,110	114,139	195,070	24,376	343,714	8,710	22,009	708,019	156,091	34,152	121,561	121,959
Virginia & Southwestern	240	127,028	10,896	141,756	27,387	34,684	1,991	39,878	.....	3,937	107,877	33,879	7,083	26,796	—13,432
Virginian	504	479,811	29,066	538,969	59,800	86,603	5,404	108,399	9,771	11,794	278,815	260,154	20,000	240,153	48,880
Wabash	2,519	1,687,197	445,026	2,343,794	337,954	464,141	80,018	984,818	12,202	67,350	1,944,857	398,937	78,725	319,542	144,777
Washington Southern	36	40,989	45,402	117,582	15,175	13,807	2,702	41,165	2,202	3,222	78,273	39,309	3,236	36,073	5,509
Western Pacific	943	277,109	131,231	439,624	85,022	50,938	21,634	150,709	13,355	17,472	339,130	100,494	30,343	70,075	52,928
Western Ry. of Alabama	133	64,025	31,690	106,717	19,475	21,155	6,358	29,500	1,522	5,445	83,393	23,324	5,113	18,208	11,774

TEN MONTHS OF FISCAL YEAR ENDING JUNE 30, 1915

Alabama & Vicksburg	143	$794,251	$333,478	$1,245,026	$192,382	$313,921	$37,220	$478,758	$26,570	$56,273	$1,105,123	$139,903	$77,736	$62,167	—$161,710
Alabama Great Southern	309	2,768,833	864,587	3,972,251	464,868	960,322	134,060	1,409,021	29,835	93,480	3,062,418	909,833	153,654	755,962	—145,614
Ann Arbor	296	1,359,134	446,920	1,929,829	201,189	267,966	50,725	786,024	3,748	74,908	1,384,560	545,269	122,300	422,522	21,439
Arizona Eastern	367	1,342,677	262,783	1,729,857	280,605	225,021	20,796	475,155	10,439	103,189	1,115,140	614,716	128,630	485,337	—327,617
Atchison, Topeka & Santa Fe	8,514	54,104,493	19,752,372	80,553,051	10,927,854	13,944,493	1,766,971	22,938,313	.....	1,545,939	51,067,201	29,485,850	3,947,344	25,522,663	1,605,959
Atlanta & West Point	93	503,568	360,272	999,586	141,470	227,045	53,858	317,943	16,443	45,917	802,238	197,348	64,029	132,945	—64,796
Atlanta, Birmingham & Atlantic	643	1,632,963	424,810	2,252,215	354,014	440,272	122,256	978,523	.....	104,806	1,999,871	252,344	121,393	130,951	—284,852
Atlantic & St. Lawrence	167	986,638	267,823	1,381,218	183,988	211,711	40,973	610,875	.....	34,010	1,081,558	299,661	108,000	191,661	74,293
Atlantic City	170	658,253	1,169,192	1,926,846	362,544	234,383	23,705	989,653	953	14,273	1,624,635	302,211	135,000	166,847	13,364
Atlantic Coast Line	4,687	17,701,486	6,761,575	26,612,265	3,853,931	4,508,293	564,280	9,451,648	96,644	738,217	19,166,811	7,445,454	1,380,000	6,061,081	—1,887,798
Baltimore & Ohio Chicago Terminal	79	.....	5,680	1,293,512	111,797	182,024	8,725	554,538	19,495	44,961	914,039	379,474	187,476	191,587	109,301
Baltimore & Ohio—System	4,516	57,364,460	11,762,725	74,876,636	7,382,861	13,276,142	1,597,769	28,801,219	462,226	1,790,375	53,302,303	21,574,333	2,720,544	18,838,696	226,239
Bangor & Aroostook	631	2,448,027	534,861	3,150,158	455,308	487,733	25,568	926,169	13,693	96,189	2,004,128	1,146,030	103,372	1,042,606	3,389
Belt Ry. Co. of Chicago	24	.....	.....	2,696,174	145,966	251,816	8,405	962,966	.....	60,593	1,429,746	1,266,428	112,439	1,153,989	301,272
Bessemer & Lake Erie	204	6,018,717	318,718	6,460,367	546,866	1,558,511	102,670	1,569,115	10,106	117,353	3,843,743	2,616,623	182,025	2,434,540	862,502
Bingham & Garfield	27	972,969	34,431	1,012,719	89,558	133,506	9,467	180,418	758	18,146	431,853	580,866	25,316	555,551	—339,883
Birmingham Southern	43	390,401	8,610	679,766	135,441	120,869	5,517	258,295	.....	34,945	555,067	124,698	25,009	99,689	—161,871
Boston & Maine	2,302	22,270,643	12,909,963	38,762,508	5,842,482	5,795,199	361,032	17,024,294	165,773	979,307	30,168,088	8,594,419	1,617,472	6,976,947	1,094,870
Buffalo & Susquehanna R. R. Corporation	253	1,122,855	67,189	1,220,705	222,907	386,910	12,629	369,437	.....	54,515	1,046,398	174,307	26,000	148,307	—71,502
Buffalo & Susquehanna Railway	91	131,187	64,525	219,403	44,697	75,988	5,416	117,621	263	23,911	267,896	—48,492	16,000	—64,493	30,306
Buffalo, Rochester & Pittsburgh	586	6,595,520	931,736	7,808,833	1,013,475	1,810,727	120,193	2,631,156	12,378	186,391	5,774,319	2,034,514	200,000	1,833,955	—376,025
Canadian Pacific Lines in Maine	233	866,500	201,870	1,143,520	186,608	174,678	57,217	489,359	.....	36,240	944,102	199,417	120,000	79,417	146,604
Carolina, Clinchfield & Ohio	248	1,595,587	143,823	1,780,218	190,253	231,741	65,208	353,898	.....	94,202	924,591	855,627	142,500	712,899	—352,308
Carolina, Clinchfield & Ohio of S. C.	18	95,589	13,523	112,102	11,936	837	16,676	20,883	.....	6,690	57,021	55,081	7,500	47,566	—28,424
Central of Georgia	1,924	6,840,027	2,525,328	10,423,225	1,395,809	1,901,038	338,069	3,624,890	14,918	347,485	7,599,595	2,823,630	473,529	2,344,307	—460,926
Central of New Jersey	678	17,533,106	4,832,280	23,672,149	2,004,954	4,418,419	299,221	8,287,249	126,622	496,725	15,630,755	8,041,394	1,195,853	6,845,501	—71,419
Central New England	304	2,757,196	383,792	3,291,865	632,044	343,879	12,479	1,059,650	.....	38,447	2,085,905	1,205,961	127,000	1,078,925	15,770
Central Vermont	411	2,196,890	736,125	3,177,082	402,285	529,973	84,344	1,489,286	23,228	71,421	2,600,538	576,545	157,600	418,219	324,826
Charleston & Western Carolina	341	1,170,981	265,975	1,513,083	289,696	266,225	36,878	546,065	5	44,071	1,182,780	330,303	50,000	280,295	—105,347
Chesapeake & Ohio Lines	2,372	25,589,531	4,735,213	32,304,776	3,684,058	6,809,814	541,007	10,749,386	194,676	718,645	22,678,032	9,626,744	1,119,568	8,499,664	352,724
Chicago & Alton	1,033	7,676,428	3,215,842	11,894,768	1,386,522	2,828,089	368,410	4,420,257	97,422	303,342	9,404,042	2,490,726	446,414	2,041,961	751,970
Chicago & Eastern Illinois	1,282	8,848,018	2,321,096	12,130,458	1,688,964	2,587,216	240,150	4,577,448	81,400	365,185	9,534,160	2,596,298	528,800	2,066,341	429,366
Chicago & Erie	270	4,086,936	477,254	5,022,188	736,717	376,299	187,335	2,307,834	22,930	130,898	3,711,744	1,310,445	161,993	1,148,410	1,558,237
Chicago & North Western	8,108	43,669,613	17,122,803	67,674,885	8,548,097	10,830,816	1,103,644	25,030,505	499,311	1,466,971	47,354,716	20,320,169	3,750,000	16,565,308	—1,014,374
Chicago, Burlington & Quincy	9,334	53,079,428	16,897,556	76,907,228	8,436,034	13,169,070	1,345,907	24,691,482	671,045	1,734,774	50,048,312	26,858,916	3,288,206	23,570,710	—465,198
Chicago, Detroit & Can. Gd. Trunk Jctn.	60	529,740	143,270	793,825	97,633	119,960	16,433	429,122	.....	14,621	677,769	116,056	28,700	87,338	—2,845
Chicago Great Western	1,428	8,084,753	2,572,585	11,651,023	1,506,240	2,047,823	466,252	4,350,506	70,273	335,604	8,767,536	2,883,488	483,648	2,396,027	—151,406
Chicago, Indianapolis & Louisville	618	3,551,206	1,419,049	5,434,023	584,419	929,279	204,240	2,011,429	1,570	170,392	3,899,278	1,534,745	266,199	1,268,054	79,589
Chicago Junction	24	.....	.....	1,643,215	208,505	187,715	10,998	915,909	.....	51,401	1,374,528	268,687	19,968	248,383	—123,499
Chicago, Milwaukee & St. Paul	10,071	53,546,315	14,936,331	76,380,309	8,489,139	11,287,243	1,457,183	30,431,002	596,849	1,515,720	52,191,501	24,188,807	3,989,058	20,173,645	—2,356,243
Chicago, Peoria & St. Louis	255	940,247	204,822	1,216,933	202,585	231,421	53,491	520,085	.....	47,246	1,054,828	162,105	51,300	110,805	203,943
Chicago, Rock Island & Gulf	477	1,822,699	495,866	2,510,849	289,159	359,024	97,188	986,185	18,236	79,530	1,829,321	681,528	77,404	603,566	64,327
Chicago, Rock Island & Pacific	7,852	38,686,237	14,709,938	57,435,320	7,515,686	9,341,153	1,467,916	23,064,480	$405,026	1,391,848	43,152,161	14,283,159	2,698,636	11,580,875	493,640
Chicago, St. Paul, Minneapolis & Omaha	1,753	9,854,343	4,176,358	15,141,996	1,575,190	2,073,610	286,283	5,761,482	145,340	361,232	10,186,417	4,955,579	856,901	4,095,073	73,836
Chicago, Terre Haute & Southeastern	372	1,662,512	160,898	1,874,069	242,516	439,449	34,978	574,741	9,010	98,818	1,399,511	474,558	120,000	354,558	151,758
Cincinnati, Hamilton & Dayton	1,003	5,854,927	1,241,589	7,935,653	1,227,476	1,712,488	195,267	3,590,055	29,882	216,877	6,968,782	966,871	361,149	603,650	180,951
Cincinnati, New Orleans & Texas Pacific	337	5,948,155	1,447,550	7,853,202	769,467	1,980,578	250,370	2,495,060	63,779	201,716	5,757,936	2,095,266	310,000	1,784,700	—617,325
Cincinnati Northern	246	1,060,347	177,087	1,290,214	195,891	258,837	26,958	430,820	.....	36,479	948,984	341,229	53,463	287,470	353,856
Cleveland, Cincinnati, Chic. & St. Louis	2,381	20,280,395	6,955,399	29,885,154	3,268,618	5,869,663	772,871	11,676,411	233,992	629,664	22,396,390	7,488,763	1,293,027	6,184,097	4,198,410
Colorado & Southern	1,089	4,862,175	1,167,756	6,512,209	765,632	1,479,108	103,177	2,046,657	39,559	198,573	4,632,706	1,879,503	352,445	1,526,702	168,017

REVENUES AND EXPENSES OF RAILWAYS

TEN MONTHS OF FISCAL YEAR ENDING JUNE 30, 1915—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total, inc. misc.	Operating expenses: Maintenance: Way and structures.	Of equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.	Net operating revenue (or deficit).	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Colorado Midland	338	$1,156,508	$181,169	$1,483,727	$231,183	$334,930	$76,637	$596,285	$11,042	$56,124	$1,306,200	$177,526	$89,709	$87,817	$130,751
Cumberland Valley	164	1,737,808	547,216	2,420,847	408,388	328,139	47,177	852,591	8,642	83,417	1,708,354	712,493	57,247	655,246	—124,622
Delaware & Hudson Co.—R. R. Dept.	881	15,485,105	2,322,845	18,908,217	1,358,760	3,105,453	266,607	6,838,577	119,880	634,976	12,310,613	6,597,603	567,619	6,029,496	.....
Delaware, Lackawanna & Western	959	25,066,352	6,884,840	35,492,528	3,736,265	5,848,183	731,892	11,488,107	296,836	752,671	22,594,466	12,898,063	1,697,232	11,199,175	650,013
Denver & Rio Grande	2,597	13,457,103	3,601,478	18,223,273	2,132,851	3,328,944	384,144	5,365,153	265,926	556,146	12,083,862	6,139,412	866,700	5,271,522	140,359
Denver & Salt Lake	255	1,031,614	265,461	1,372,642	166,947	236,919	22,979	463,697	.....	52,762	940,060	432,582	60,000	372,582	188,003
Detroit & Mackinac	400	579,311	258,087	905,115	112,012	160,001	20,916	335,995	1,021	27,889	657,834	247,281	67,451	179,830	—47,694
Detroit & Toledo Shore Line	79	1,238,078	.....	1,241,573	120,860	100,849	18,766	359,484	.....	28,301	628,260	613,313	57,137	556,176	—76,352
Detroit, Grand Haven & Milwaukee	191	1,340,089	503,749	2,137,157	299,543	337,776	67,117	1,120,943	8,553	48,158	1,882,090	255,067	33,600	218,992	—4,709
Detroit, Toledo & Ironton	441	1,284,264	140,729	1,515,639	200,903	243,970	38,477	897,252	.....	57,589	1,438,192	77,447	58,500	18,946	594,761
Duluth & Iron Range	284	2,961,716	183,528	3,276,411	619,601	582,265	10,172	852,327	23,410	88,410	2,176,185	1,100,226	167,912	932,314	—1,165,709
Duluth, Missabe & Northern	369	3,344,239	267,466	3,705,084	492,591	680,765	19,869	842,526	24,655	129,315	2,189,722	1,515,363	192,628	1,322,735	—966,749
Duluth, South Shore & Atlantic	628	1,459,039	718,679	2,393,248	424,299	352,698	80,387	955,812	37,486	104,025	1,954,707	438,542	159,970	278,465	—148,946
Duluth, Winnipeg & Pacific	185	891,481	174,616	1,099,474	162,358	180,281	21,487	408,942	9,600	61,513	844,181	255,293	54,862	200,431	—75,038
Elgin, Joliet & Eastern	777	6,491,357	52	6,899,889	730,876	1,290,858	56,824	2,101,742	.....	190,757	4,370,716	2,529,172	360,910	2,167,998	—507,085
El Paso & Southwestern Co	1,027	4,773,623	1,093,528	6,343,266	817,175	890,663	187,565	1,707,290	57,665	234,680	3,882,610	2,460,656	330,965	2,114,465	—253,924
Erie	1,988	33,493,124	7,456,248	45,189,215	4,782,297	10,981,352	945,661	16,579,054	308,172	1,042,168	34,539,324	10,649,891	1,256,404	9,368,153	—959,517
Florence & Cripple Creek	87	833,845	157,905	1,010,085	112,201	101,140	21,504	290,415	.....	41,092	566,352	443,733	56,580	387,153	12,020
Florida East Coast	715	2,170,480	1,673,994	4,456,226	593,650	564,977	88,380	1,403,736	31,312	165,149	2,816,565	1,639,661	195,425	1,443,398	229,665
Fort Worth & Denver City	454	3,121,986	1,232,222	4,598,206	475,364	709,684	71,814	1,848,344	30,019	145,263	3,280,487	1,317,720	119,667	1,198,053	301,703
Galveston, Harrisburg & San Antonio	1,346	6,248,021	2,509,798	9,480,448	1,355,410	1,591,566	293,227	4,130,759	92,106	352,403	7,807,393	1,673,056	384,997	1,286,433	—118,646
Georgia	307	1,609,001	613,187	2,408,271	265,437	502,336	119,248	1,039,974	3,265	78,504	2,008,730	399,541	28,540	360,159	—235,249
Georgia, Southern & Florida	395	1,098,420	556,134	1,889,535	254,234	377,688	71,825	772,955	2,712	103,680	1,583,094	306,442	95,909	208,783	—74,620
Grand Rapids & Indiana	575	2,606,678	1,518,125	4,479,587	498,570	745,473	109,172	1,904,030	13,263	140,767	3,411,275	1,068,312	231,598	834,227	151,797
Grand Trunk Western	347	4,101,512	1,449,278	5,960,705	893,462	1,210,997	192,502	2,603,570	68,287	149,850	5,118,668	842,037	359,200	482,017	—146,607
Great Northern	8,054	40,397,304	11,077,855	57,137,947	6,399,655	6,026,428	968,872	15,446,692	681,013	1,033,299	30,501,225	26,636,722	3,667,801	22,966,348	1,036,764
Gulf & Ship Island	308	1,029,124	252,973	1,366,981	171,375	302,169	25,109	366,083	2,541	69,432	936,709	430,272	77,056	352,962	—123,897
Gulf, Colorado & Santa Fe	1,937	10,812,734	2,482,450	13,989,696	1,969,135	2,044,737	279,037	4,936,062	.....	336,953	9,553,764	4,435,932	478,011	3,954,546	1,869,746
Hocking Valley	352	4,091,600	704,161	5,149,495	595,123	988,307	93,209	1,709,843	.....	144,799	3,531,280	1,618,215	369,000	1,249,215	—267,409
Houston, East & West Texas	191	808,899	253,187	1,127,358	195,423	168,896	18,942	460,598	1,389	32,196	877,181	250,178	41,271	208,582	—60,243
Houston & Texas Central	864	3,944,285	1,229,015	5,568,256	992,541	787,805	153,786	2,225,131	22,368	176,179	4,353,607	1,214,649	253,074	960,249	266,230
Illinois Central	4,767	37,563,722	10,791,209	52,391,378	7,120,600	11,484,855	1,035,315	18,994,521	298,319	1,274,252	39,955,130	12,436,249	2,700,200	9,717,367	—326,120
Indiana Harbor Belt	110	.....	.....	2,759,067	346,554	266,107	27,984	1,205,960	.....	75,975	1,922,581	836,486	76,467	759,315	206,936
International & Great Northern	1,159	5,646,072	1,496,706	7,718,576	1,285,801	1,333,676	229,725	3,467,366	28,535	301,179	6,646,282	1,072,294	340,000	726,803	—776,466
Kanawha & Michigan	177	2,055,204	287,873	2,410,790	330,409	609,241	27,429	723,871	35	64,748	1,755,732	655,057	114,421	540,602	—138,013
†Kansas City, Mexico & Orient	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas City Southern	827	6,469,390	1,185,883	8,411,796	884,715	959,827	282,781	2,863,076	.....	405,311	5,356,478	3,055,319	477,977	2,572,933	—352,872
Lake Erie & Western	900	3,867,423	629,445	4,734,629	659,034	828,219	137,265	1,914,970	.....	122,304	3,661,792	1,072,837	232,541	839,236	251,147
Lehigh & Hudson River	97	1,373,200	96,152	1,486,353	195,143	198,699	14,180	535,070	.....	44,643	987,735	498,618	41,500	457,118	138,989
Lehigh & New England	296	1,990,102	12,454	2,104,433	282,411	308,743	19,994	531,059	.....	58,699	1,200,906	903,527	54,435	849,092	151,936
Lehigh Valley	1,444	29,605,636	3,350,010	35,045,844	3,663,240	6,847,959	783,751	12,802,799	116,846	734,682	24,944,773	10,101,071	1,412,500	8,679,362	671,956
Long Island	398	3,120,040	6,279,422	10,795,290	1,208,487	1,205,010	111,269	4,635,600	70,911	284,713	7,515,990	3,279,300	709,241	2,567,407	601,896
Louisiana & Arkansas	279	1,181,226	177,915	1,399,091	250,766	232,739	27,842	381,617	.....	41,512	934,035	465,057	67,400	397,404	—41,757
Louisiana Ry. & Navigation Co	351	1,347,413	225,873	1,676,750	314,040	180,211	56,939	677,869	.....	53,002	1,282,061	394,689	87,000	307,689	44,687
Louisiana Western	208	1,155,656	560,800	1,844,499	228,103	324,595	67,762	572,119	26,546	63,866	1,282,843	561,657	102,988	458,354	—84,410
Louisville & Nashville	5,030	31,041,837	9,118,850	43,267,064	7,295,243	8,828,667	1,114,734	14,765,320	166,489	1,030,092	33,120,994	10,146,070	1,756,556	8,384,212	—2,502,154
Louisville, Henderson & St. Louis	200	768,641	325,665	1,169,523	244,094	160,635	53,316	398,172	.....	32,402	888,619	280,904	38,000	242,788	—9,399
Maine Central	1,219	5,958,914	2,814,170	9,435,421	1,331,040	1,448,404	108,729	3,565,063	51,758	273,737	6,777,906	2,657,515	518,850	2,138,486	56,706
Michigan Central	1,800	17,267,796	7,370,779	27,827,720	3,177,772	4,529,795	619,529	11,467,344	484,557	570,189	20,849,186	6,978,534	1,287,350	5,686,466	1,030,440
Midland Valley	380	762,724	345,013	1,180,535	223,088	205,075	20,768	397,324	.....	54,899	911,153	269,383	60,324	208,606	49,339
Minneapolis & St. Louis	1,646	6,486,812	1,614,177	8,576,773	971,895	1,217,362	178,374	3,328,428	637	208,542	5,905,239	2,671,534	371,345	2,300,182	270,019
Minn., St. Paul & Sault Ste. Marie	4,103	16,973,757	4,908,554	23,656,028	2,604,571	3,449,281	486,469	7,765,262	141,460	508,546	14,880,838	8,775,190	960,217	7,814,973	18,287
Missouri & North Arkansas	365	641,089	294,720	1,008,214	297,410	224,229	32,413	515,175	.....	57,342	1,126,569	—118,355	59,268	—178,171	—200,014
Missouri, Kansas & Texas System	3,865	19,397,622	6,834,340	28,232,058	3,780,921	3,782,762	551,231	10,258,493	252,526	860,037	19,363,242	8,868,816	1,105,364	7,758,168	1,646,140
Missouri, Oklahoma & Gulf	334	784,909	185,350	1,015,578	222,940	203,063	41,863	472,669	1,077	73,171	1,014,784	794	60,835	—60,590	—15,642
Missouri, Oklahoma & Gulf of Texas	19	104,207	2,749	109,576	15,408	24,942	2,141	46,565	.....	5,259	94,315	15,261	1,739	13,522	3,436
Missouri Pacific	3,920	17,869,799	3,920,894	23,762,839	3,052,723	4,539,836	579,219	9,362,454	75,168	584,696	18,194,096	5,568,743	995,960	4,555,286	1,547,083
Mobile & Ohio	1,122	7,563,636	1,038,283	9,132,151	906,882	1,586,040	393,973	3,494,306	26,026	288,917	6,696,144	2,436,007	317,685	2,116,992	37,077
Monongahela	72	865,052	20,278	901,999	167,172	81,079	6,009	229,712	.....	20,429	504,400	397,599	16,648	380,951	—327,281
Morgan's La. & Tex. R. R. & S. S. Co.	405	2,553,709	878,192	3,759,698	461,732	650,356	113,207	1,485,896	24,222	118,033	2,852,499	907,199	198,909	704,468	6,760
Nashville, Chattanooga & St. Louis	1,231	6,300,411	2,116,566	9,213,583	1,307,280	1,851,536	454,992	3,717,060	90,373	299,169	7,720,132	1,493,451	268,490	1,223,563	—717,270
Nevada Northern	165	799,689	77,082	910,121	161,038	130,953	5,085	223,347	563	38,889	559,826	350,295	50,256	299,987	—332,453
New Orleans & North Eastern	204	2,198,721	447,035	2,917,998	304,919	619,537	98,208	1,040,666	57,756	116,675	2,237,761	680,236	146,990	533,246	—73,374
New Orleans Great Northern	283	970,425	232,667	1,323,693	173,419	207,811	25,497	404,557	1,772	63,152	876,208	447,485	29,465	417,890	—187,773
New Orleans, Mobile & Chicago	403	1,181,395	239,621	1,500,146	284,082	203,297	38,752	526,676	Cr. —42	68,887	1,121,652	378,494	63,068	315,128	—273,763

†Operations began July 6, 1914. No data covering ten months.

REVENUES AND EXPENSES OF RAILWAYS

TEN MONTHS OF FISCAL YEAR ENDING JUNE 30, 1915—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total, inc. misc.	Operating expenses: Maintenance: Way and structures.	Of equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.	Net operating revenue (or deficit).	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
New Orleans, Texas & Mexico	286	$999,060	$201,512	$1,266,398	$258,581	$172,513	$37,718	$520,489	.....	$95,266	$1,084,568	$181,830	$16,088	$165,566	$33,202
†New York Central Railroad	5,982	32,807,304	13,132,052	53,438,700	5,535,810	11,454,451	982,502	19,220,545	$763,190	1,395,306	39,351,805	14,086,895	3,253,081	10,830,858	.....
New York, Chicago & St. Louis	568	7,932,784	1,093,920	9,432,496	1,094,785	1,367,708	430,086	4,422,781	49,863	202,262	7,567,485	1,865,011	401,267	1,462,977	79,913
New York, New Haven & Hartford	2,003	25,244,071	22,174,415	53,296,468	6,424,176	8,136,950	354,685	20,295,543	486,852	1,325,472	37,008,899	16,287,568	2,169,000	14,112,378	2,047,327
New York, Ontario & Western	568	5,119,653	1,309,880	7,498,870	938,102	1,376,288	83,095	2,965,541	.....	156,334	5,519,360	1,979,510	198,824	1,780,636	150,762
New York, Philadelphia & Norfolk	112	2,386,609	403,547	3,042,867	296,016	634,296	43,176	1,346,815	45,553	101,463	2,467,319	575,548	96,800	478,517	12,792
New York, Susquehanna & Western	140	1,901,832	433,335	2,611,339	251,694	298,600	23,914	1,157,270	.....	56,959	1,787,303	824,036	57,687	754,729	179,999
Norfolk & Western	2,042	29,330,882	3,870,389	34,598,138	4,539,881	6,849,891	585,993	10,383,114	92,274	694,403	22,752,919	11,845,219	1,542,000	10,302,656	—293,066
Norfolk Southern	900	2,166,187	852,027	3,254,117	442,390	510,235	72,421	1,248,960	852	196,619	2,471,477	782,640	107,442	673,816	—132,522
Northern Pacific	6,498	37,193,639	11,267,477	53,185,818	6,728,671	6,621,538	946,349	16,080,827	781,403	927,721	31,145,221	22,040,597	3,931,741	18,105,246	—539,761
Northwestern Pacific	401	1,128,123	1,454,707	2,919,247	517,916	412,336	49,432	1,152,270	.....	80,936	2,176,858	742,389	159,649	582,617	—125,227
Oahu Railway & Land Co	109	746,717	214,712	1,030,970	100,507	86,674	6,626	215,825	.....	41,962	451,594	579,376	71,826	507,550	27,817
Oregon Short Line	2,162	11,731,168	3,630,497	16,811,549	2,299,923	2,383,110	310,119	4,211,489	256,546	543,320	9,932,917	6,878,632	1,050,593	5,825,719	—1,182,833
Oregon-Washington R. R. & Nav. Co	1,998	8,243,762	3,555,448	12,940,288	1,460,925	1,607,158	387,635	4,315,270	119,856	571,708	8,396,670	4,543,618	960,207	3,581,741	107,049
Panhandle & Santa Fe	669	2,601,788	568,951	3,330,788	648,495	665,643	38,533	1,048,344	.....	86,744	2,487,759	843,029	92,948	748,961	430,690
Pennsylvania *Company*	1,757	31,170,039	8,025,920	43,612,428	6,350,486	8,356,552	761,994	16,427,338	351,180	1,117,783	33,365,333	10,247,094	2,615,949	7,628,597	—1,786,714
Pennsylvania *Railroad*	4,512	106,121,371	31,673,380	151,710,563	20,351,204	31,026,965	2,047,055	57,357,764	2,238,772	4,136,856	117,158,617	34,551,946	6,434,283	28,096,491	—1,007,808
Pere Marquette	2,317	10,536,078	3,328,310	15,126,304	1,387,777	2,965,121	317,668	5,935,275	45,236	423,009	11,070,829	4,055,475	423,692	3,630,068	2,628,100
Philadelphia & Reading	1,120	31,416,998	5,365,447	38,664,477	3,680,046	7,072,858	452,361	13,873,582	161,336	703,338	25,932,690	12,731,787	1,000,103	11,726,787	—1,041,488
Philadelphia, Baltimore & Washington	717	8,109,751	6,853,874	16,689,708	2,548,609	3,210,347	272,844	7,176,722	182	464,334	13,671,038	3,018,669	565,313	2,452,381	249,159
Pittsburgh & Lake Erie	225	9,884,993	1,334,637	11,724,705	1,464,300	2,604,679	139,786	3,229,413	33,200	276,758	7,748,135	3,976,570	508,596	3,467,848	—1,721,583
Pittsburgh, Cincinnati, Chic. & St. Louis	1,479	21,671,294	6,601,937	31,901,126	4,112,375	6,343,220	653,340	12,035,735	242,982	799,485	24,187,137	7,713,989	1,612,315	6,099,142	371,979
Pittsburgh, Shawmut & Northern	294	1,423,404	103,934	1,547,441	265,048	416,925	16,949	513,520	.....	42,245	1,254,688	292,753	16,236	276,518	34,753
Port Reading	21	1,046,786	.....	1,272,670	115,252	77,719	387	431,493	.....	3,263	628,111	644,559	120,000	524,559	55,928
Richmond, Fredericksburg & Potomac	88	1,194,328	825,848	2,339,490	214,198	305,599	36,227	867,058	45,447	72,158	1,540,687	798,803	69,402	729,238	—21,315
Rutland	468	1,571,599	950,071	2,869,759	340,119	493,892	83,484	1,135,162	11,470	58,125	2,122,252	747,507	170,718	576,755	6,222
St. Joseph & Grand Island	258	931,342	247,233	1,270,931	218,223	202,238	46,928	474,507	.....	51,831	993,728	277,204	80,023	196,973	81,851
St. Louis & San Francisco	4,749	23,724,831	8,391,377	34,363,143	4,658,143	5,390,901	660,366	11,550,988	.....	910,094	23,133,825	11,229,318	1,030,981	10,182,033	1,232,582
St. Louis, Brownsville & Mexico	548	1,142,662	598,517	1,907,130	340,903	207,307	54,217	701,159	.....	107,911	1,402,321	504,809	63,423	440,921	11,563
St. Louis, Iron Mountain & Southern	3,364	19,059,001	4,356,458	25,357,035	3,619,401	4,592,427	593,676	8,056,238	81,034	648,244	17,591,019	7,766,016	1,120,568	6,628,611	—2,456,914
St. Louis Merchants' Bridge Terminal	9	.....	1,736	1,538,152	193,494	73,903	7,830	779,867	.....	63,340	1,118,434	419,718	70,109	349,594	160,923
St. Louis, San Francisco & Texas	235	675,027	250,420	991,154	240,021	170,804	22,837	472,117	.....	44,753	950,532	40,623	12,477	28,116	—157,790
St. Louis Southwestern	943	4,570,110	974,798	5,886,923	683,253	1,001,069	254,983	1,677,171	32,015	261,711	3,906,698	1,980,226	330,734	1,648,458	—741,808
St. Louis Southwestern of Texas	810	2,152,124	756,014	3,156,715	745,342	770,482	120,323	1,542,205	7,694	177,851	3,272,709	—115,994	147,161	—264,078	—89,755
San Antonio & Aransas Pass	724	2,155,313	867,309	3,257,105	696,211	616,582	65,516	1,565,149	.....	117,232	3,060,351	196,754	128,309	67,634	—461,581
San Pedro, Los Angeles & Salt Lake	1,132	4,972,885	2,047,600	7,722,496	736,186	1,189,531	326,462	2,531,195	149,186	182,266	5,114,826	2,607,670	426,614	2,180,477	—80,582
Seaboard	3,119	12,039,711	3,883,493	17,889,410	2,048,787	2,679,598	637,334	6,564,329	97,840	548,470	12,574,100	5,315,310	890,211	4,417,379	—1,442,066
Southern	7,022	34,247,565	13,671,006	52,539,019	7,253,776	9,290,264	1,790,495	19,280,223	329,711	1,681,271	39,444,676	13,094,342	2,155,821	10,923,084	—3,658,805
Southern in Mississippi	281	514,837	267,647	857,280	220,328	87,694	24,057	398,805	.....	36,824	767,708	89,572	84,407	4,690	—145,976
Southern Pacific	6,517	48,535,500	23,031,501	79,731,431	8,191,612	11,735,137	1,646,835	25,694,680	1,372,531	2,277,002	50,664,944	29,066,487	3,939,774	25,100,711	—2,411,395
Spokane International	163	469,736	135,142	636,159	109,793	47,169	22,656	210,707	33	35,161	425,518	210,640	43,149	167,364	—155,416
Spokane, Portland & Seattle	556	2,195,359	1,177,011	3,716,359	577,643	359,084	76,014	876,182	33,418	134,006	2,056,139	1,660,220	534,000	1,124,155	—210,423
Tennessee Central	294	843,203	317,156	1,238,334	298,895	165,196	54,810	490,130	.....	68,274	1,077,165	161,169	44,752	116,286	—196,204
Terminal R. R. Ass'n of St. Louis	35	.....	1,850	2,262,728	183,920	124,719	9,196	795,617	.....	53,320	1,166,772	1,095,956	286,004	809,952	288,270
Texas & New Orleans	469	2,063,944	867,378	3,258,439	538,496	804,996	78,968	1,335,776	84,456	105,588	2,947,055	311,384	158,934	150,733	—54,171
Texas & Pacific	1,893	10,641,017	3,450,323	15,301,145	1,589,108	2,385,487	367,370	6,618,008	139,767	388,653	11,477,913	3,823,233	696,136	3,122,921	—261,193
Toledo & Ohio Central	446	3,441,398	501,762	4,189,305	629,430	819,276	78,388	1,612,474	17,551	99,668	3,256,787	932,518	221,355	709,171	63,418
Toledo, Peoria & Western	248	565,673	370,754	997,563	161,390	272,542	24,001	446,304	.....	36,129	940,366	57,197	61,000	—3,810	—13,056
Toledo, St. Louis & Western	451	3,309,251	271,208	3,847,719	455,767	645,254	166,182	1,504,253	.....	82,597	2,854,052	993,666	226,844	766,822	—239,524
Trinity & Brazos Valley	330	653,368	157,360	877,316	204,523	110,504	29,802	427,121	.....	80,115	852,065	25,252	43,890	—19,164	61,327
Uister & Delaware	129	436,258	274,689	853,780	127,703	171,005	14,175	398,502	596	35,329	747,311	106,470	33,000	72,769	—66,247
Union Pacific	3,616	30,344,950	8,225,614	43,294,989	5,049,749	6,223,252	991,884	11,023,178	699,912	1,235,709	25,207,429	18,087,560	1,972,373	16,110,708	—418,355
Union R. R. of Baltimore	9	1,117,139	213,801	1,348,369	136,868	.....	.....	46,122	.....	24,730	207,719	1,140,650	57,473	1,083,176	9,910
Union R. R. of Pennsylvania	31	.....	.....	2,704,988	410,331	931,474	1,210	1,250,855	.....	34,648	2,628,518	76,470	35,374	41,096	—199,248
Vandalia	910	6,270,202	1,968,212	9,258,413	1,223,131	1,875,524	236,909	3,653,986	94,762	218,005	7,302,317	1,956,096	325,881	1,629,677	—161,501
Vicksburg, Shreveport & Pacific	171	649,241	369,484	1,148,666	208,142	272,954	35,590	451,718	22,284	50,486	1,041,175	107,491	72,407	35,084	—266,820
Virginia & Southwestern	240	1,351,316	132,906	1,527,742	265,584	361,125	23,485	448,129	.....	38,328	1,136,651	391,091	66,649	324,442	—93,902
Virginian	503	4,237,468	322,308	4,863,439	609,613	853,683	53,698	1,114,430	98,509	111,931	2,817,118	2,046,321	212,500	1,833,579	—349,883
Wabash	2,518	17,075,577	5,131,545	24,398,826	2,808,802	4,502,100	853,237	10,100,037	140,138	617,373	19,001,530	5,397,296	807,843	4,586,485	337,669
Washington Southern	36	350,279	405,392	1,029,200	126,010	149,076	14,673	415,624	19,424	30,362	755,168	274,032	32,698	241,173	—14,050
West Jersey & Seashore	356	1,556,377	3,360,082	5,406,899	923,161	853,174	127,103	2,357,697	26,488	136,704	4,424,328	982,571	286,005	696,254	41,626
Western Maryland	661	5,874,101	795,078	7,000,726	991,318	1,195,343	217,643	2,544,709	25,508	191,547	5,159,044	1,841,682	252,000	1,589,682	1,260,854
Western Pacific	943	3,311,310	996,998	4,589,528	952,694	598,480	241,569	1,552,023	110,533	204,221	3,659,519	930,008	287,007	641,620	82,694
Western Ry. of Alabama	133	592,560	359,096	1,055,185	191,595	246,950	58,920	319,797	15,429	46,589	878,916	176,269	53,956	121,750	—148,954
Wheeling & Lake Erie	459	3,474,453	463,521	4,343,868	478,820	855,368	94,405	1,735,039	12,570	145,482	3,321,683	1,022,185	313,614	708,570	—1,034,178
Yazoo & Mississippi Valley	1,382	7,553,532	1,877,349	9,973,214	1,494,146	1,394,624	170,802	3,701,546	17,091	243,482	7,011,150	2,962,064	507,000	2,453,247	—533,203

†Figures shown here are for four months ending April 30, 1915.

The Greatness of the Pennsylvania

The award of the grand prize to the Pennsylvania Railroad at the Panama-Pacific International Exposition at San Francisco, was announced last week. In supplying information to the Jury of Awards, the company gave the following striking figures:

The freight service rendered by the Pennsylvania system in a year is the equivalent of one ton carried 36,900,000,000 miles; the passenger service is equivalent to one person carried 4,500,000,000 miles. The system's receipts are a million dollars a day; it pays out in wages half a million daily, and for supplies a quarter million. Its employees in normal times number upwards of 250,000, and its payrolls indirectly support 1,000,000 persons. It traverses 13 states and the District of Columbia and supplies transportation service to more than half the population of the United States. Its 4,500 stations include eight of the ten largest cities in the country.

The company's exhibit at the exposition includes a huge model of New York City showing the railroad approaches, a relief map of the entire territory served by the Pennsylvania lines, constructed on a scale of two miles to the inch, making it the largest topographical map in the world, models of Pennsylvania station in New York City and the Union station at Washington, and a moving picture theater.

MEETINGS AND CONVENTIONS

The following list gives the names of secretaries, dates of next or regular meetings, and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

American Association of Demurrage Officers.—F. A. Pontious, 455 Grand Central Station, Chicago. Next meeting, July 21, 1915, Milwaukee, Wis.

American Association of Railroad Superintendents.—E. H. Harman, Room 101, Union Station, St. Louis, Mo. Next meeting, August 19-20, 1915, San Francisco, Cal.

American Railroad Master Tinners, Coppersmiths and Pipefitters' Association.—W. E. Jones, C. & N. W., 3814 Fulton St., Chicago. Annual meeting, July 13-16, 1915, Hotel Sherman, Chicago.

American Railway Tool Foremen's Association.—Owen D. Kinsey, Illinois Central, Chicago. Annual meeting, July 19-21, 1915, Hotel Sherman, Chicago.

American Society for Testing Materials.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa. Annual meeting, June 22-26, 1915, Hotel Traymore, Atlantic City, N. J.

American Society of Civil Engineers.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

Association of Railway Electrical Engineers.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Semi-annual meeting with Master Car Builders' and Master Mechanics' Association. Annual meeting, October, 1915.

Engineers' Society of Western Pennsylvania.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday of each month, Pittsburgh.

General Superintendents' Association of Chicago.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.

International Railway General Foremen's Association.—Wm. Hall, 1126 W. Broadway, Winona, Minn. Next convention, July 13-16, 1915, Sherman House, Chicago.

International Railroad Master Blacksmiths' Association.—A. L. Woodworth, C. H. & D., Lima, Ohio. Annual meeting, August 17, 1915, Philadelphia, Pa.

Niagara Frontier Car Men's Association.—E. N. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.

Peoria Association of Railroad Officers.—M. W. Rotchford, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.

Railroad Club of Kansas City.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.

Railway Telegraph and Telephone Appliance Association.—G. A. Nelson, 50 Church St., New York. Meetings with Association of Railway Telegraph Superintendents.

Salt Lake Transportation Club.—R. E. Rowland, David Keith Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.

Southern Association of Car Service Officers.—E. W. Sandwich, A. & W. P. R. R., Atlanta, Ga. Next meeting, July 15, 1915, Atlanta. Annual meeting, January, 1916.

Southern & Southwestern Railway Club.—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Piedmont Hotel, Atlanta.

Toledo Transportation Club.—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.

Traffic Club of Chicago.—W. H. Wharton, La Salle Hotel, Chicago.

Traffic Club of Pittsburgh.—D. L. Wells, Genl. Agt., Erie R. R., 1924 Oliver Bldg., Pittsburgh, Pa. Meetings bi-monthly, Pittsburgh. Annual meeting, 2d Monday in June.

Transportation Club of Detroit.—W. R. Hurley, Superintendent's office, N. Y. C. R. R., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.

Traffic News

The Oregon Short Line has announced that the serving of liquors in its dining cars will be discontinued on July 1.

The Great Northern has been awarded the gold medal at the Panama Pacific Exposition for the exploitation of scenic attractions, agricultural developments and industrial resources.

The western transcontinental railways have filed with the Interstate Commerce Commission their new tariffs of rates to intermediate western points in accordance with the decisions of the Interstate Commerce Commission, effective on July 15.

The Railroad Commission of Alabama has changed from July 1 to November 30, 1915, the time for the expiration of the term of its order allowing the principal roads of the state to charge 10 per cent above the tariff rate on certain commodities named in the "Eight Group Act."

The Nashville, Chattanooga & St. Louis is placing tablets at various points on its line marking points of interest, such as the scenes of battles during the civil war, so that passengers may easily recognize them from the car windows. The markers are of cast metal painted white with black lettering, and are mounted on railroad rails set in concrete. The markers also indicate the names of the principal streams crossed.

Not all of the summer travel to mountains and seashore is in the northern states. The Southern Railway reports a new train, put on last week, between Jacksonville, Fla., and Columbia, S. C., leaving Jacksonville at 8 p. m., and arriving at Asheville, N. C., at 2:10 p. m., with corresponding return schedule; sleeping cars between Jacksonville and Asheville, and between Savannah and Asheville. This week two sleeping car lines were established between New Orleans and Asheville; one via Montgomery and Atlanta and the other via Birmingham and Chattanooga; and two sleeping car lines between Memphis and Asheville, one starting in the morning and the other in the evening. Next Monday there will be a new train between Atlanta and Asheville.

The United States Public Health Service has been studying the experiences of the western and southwestern states in connection with tuberculosis and the large number of persons who go from the east to that region to improve their health; and while the need of very particular precautions in the sanitation of cars is emphasized, as always in discussions on this topic, the report declares that the degree of communicability of the disease has been overestimated. Medical statistics are notoriously unreliable. Something like 10,000 consumptives go west every year to die, says the report; and of those who die 46 per cent live less than six months after arrival. The tuberculous population of western Texas and New Mexico is said to be more than 50,000. In Albuquerque, N. M., the consumptive population which has come there from other states numbers more than 2,000; in El Paso over 2,000, and in San Antonio 3,500.

The Chicago, Rock Island & Pacific on June 19, put in effect new service to San Francisco via its Rocky Mountain Limited train from Chicago to Omaha, the Union Pacific to Ogden and the Southern Pacific from Ogden to San Francisco. No change will be made in the Rocky Mountain Limited service between Chicago and Colorado. The train leaves Chicago at 10:00 a. m., and leaves Omaha at 12:40 a. m., arriving at San Francisco at 9:30 a. m. the third morning. Returning, the train leaves San Francisco at 2:20 p. m., and arrives at Chicago at 2:50 p. m. New service was also announced in connection with the Colorado-California Express, which leaves Chicago at 10:30 p. m., and which will run west of Denver on the Union Pacific and Southern Pacific, arriving at San Francisco at 9:30 a. m., the fourth morning. Returning, the train leaves San Francisco at 2:20 p. m. and arrives at Chicago at 7:55 a. m.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The Interstate Commerce Commission has announced a hearing to be held at Chicago, beginning on July 19 and continuing for about two weeks, in connection with the western rate advance case. Evidence is to be taken at these hearings on advances on a number of commodities which have been filed since the beginning of the main hearings in the case. The hearings on July 19 to 24 will be devoted to agricultural implements, canned goods and furniture, proposed changes in rules and practices relating to general transit rules on grain and milling of grain in transit. July 26 to 31 will be devoted to beer and liquor, boots and shoes, cement, clothing, granite and marble, iron and steel, wire, lumber, lime, machinery, oil, paper, steel rails, cross ties, structural iron, sugar, sand, stone and other commodities. Evidence will also be taken on proposed changes in rules.

Rates to or from Certain Points in the Chicago Switching District

Opinion by Commissioner Clark:

The Lowrey tariff, of 1910, provided, with some exceptions, for the application of Chicago rates to and from industries, and other stations located within the Chicago switching district, whether or not such industry, or station was located upon or directly connected with the line performing the road haul. The Merchants Lighterage Company, and the Chicago Warehouse & Terminal Company, were and are parties to the Lowrey tariff and shipments to or from the stations of the lighterage company or of the tunnel company move as through shipments, these companies receiving divisions or allowances from the through rates.

It has now been proposed to cancel these arrangements with resulting increases in the rates to the stations of these companies, but this cancellation the commission refuses to allow.

The tunnels of the Chicago Tunnel Company, the stock of which is owned by the Chicago Warehouse & Terminal Company, are under the streets of the main wholesale and retail district. They aggregate about 60 miles, are 7.5 ft. high and 6 ft. wide, contain tracks of 2 ft. gage and are electrically operated. Access to the tunnels from the surface is afforded by 58 elevators which connect with the stations of the various railroads entering Chicago, 19 elevators connected with commercial houses and five elevators at so-called universal stations.

The tunnel company has two classes of freight stations: One, "universal" stations, at which less-than-carload shipments are received from and delivered to the public generally; the other, "commercial" stations, which are analogous to private sidings.

The tunnel company receives its compensation out of the through rates, without limitation as to the amount of freight taken from or delivered to the line-haul carriers, if the freight originates or is delivered at its universal stations. On that originating at its commercial stations it receives no compensation from the line-haul carriers unless certain minimum quantities are delivered to it by one shipper, or by it to one consignee from one of the line-haul carriers, in one day, nor unless the gross revenue accruing to the line-haul carrier and its connections on the required minimum quantity of freight equals or exceeds $15.

The eastern lines, such as the Erie, the Wabash, the New York Central, and the Pennsylvania, do not propose to withdraw the arrangement for through rates in connection with the tunnel company to or from its universal stations.

The lighterage company operates two boats on the Chicago river. It maintains universal stations and also serves certain industries at docks or landings not used by other shippers.

Both the lighterage and tunnel companies file tariffs and reports with the commission and have long been recognized as common carriers. Neither of them has had gross earnings sufficient to pay operating expenses and fixed charges.

In general, Chicago rates apply on shipments to and from all points within the Chicago switching district. Various universal stations for the receipt and delivery of less-than-carload freight are maintained by railroads reaching this district, to or from which Chicago rates are applied, the carriers compensating each other for the necessary switching service. The commission sees no substantial difference between the services performed by the tunnel and lighterage companies and those performed by the line-haul carriers for each other or those performed for the line-haul carriers by the several belt-line or industrial railroads within the switching district, and finds no good reason for placing the shippers served by the tunnel and lighterage companies at a disadvantage as compared with other shippers and consignees in the Chicago district.

The line-haul carriers believe that they are within their rights in cancelling the through rates because the service rendered by the tunnel and lighterage companies is a service beyond the rails of the line-haul carriers, for which they have a legal right to insist upon an additional charge. Since the line-haul carriers, however, join with each other and with various industrial and belt-line railroads in applying Chicago rates to and from industries in the switching district, the commission fails to see how discrimination could be avoided if they refused to accord the same rates and services to industries served by the tunnel and lighterage companies. The situation in Chicago is such that no single carrier can adequately serve the public with its own rails. It must enter into arrangements with other carriers which are in essence extensions of its rails. Transportation activities in and rates to and from Chicago are subject to conditions of intense competition. All this has led to the establishment and long maintenance of arrangements between the trunk lines themselves and with numerous terminal and belt lines in the Chicago district, which, have long included the tunnel and lighterage companies. No sufficient justification has been shown for singling them out from among the other terminal carriers or agencies in the Chicago switching district for the withdrawal of the uniform application of the Chicago rates.

For each rate, a carrier offers and obligates itself to perform a certain amount of service. If the service so offered and for a long time performed in consideration of that rate includes taking the property transported from a given point and delivering it at a given point, the delivery at that point is in no sense a "free service."

Commissioner Harlan, in a dissenting opinion, notes that the tunnel line cannot interchange equipment and that to accord joint rates to it is to extend transportation in interstate commerce "to the very basements of the private commercial establishments located along the tunnel." Whatever the value of the tunnel as a relief to congestion, it nevertheless offers a shipper's service and not a railway service. It does not differ in any particular having legal significance from the service performed by transfer and teaming companies in all the large cities.

So far as less-than-carload traffic is concerned, and such traffic only is handled by the tunnel company, the shippers of this country, as a general rule, bear the burden of getting it to and from the freight stations of the railroads. The trunk lines, however, several years ago, undertook to take this burden from shippers in Chicago, along the line of the tunnel and the route of the lighterage company, and to assume it themselves. In the tariffs now under suspension they have attempted to withdraw this free service and to put the burden back upon these shippers, where it properly belongs, and where, until a few years ago, it rested.

The free trap-car service which the carriers are endeavoring under other tariffs to withdraw is involved in another proceeding in which those tariffs are under suspension. But having here sanctioned the continuance of the free tunnel service partly because of the free trap-car service, the commission may later be compelled, under the reasoning of the majority report, to sanction and require the continuance of the free trap-car service partly because of the free tunnel service. These vastly important questions are thus pursued around a circle, and the dealing with them piecemeal, as in the majority report, and without relation to the broad general principles involved, makes any constructive consideration of them possible.

There can be no real regulation of interstate transportation without an affirmative course of action on the part of the commission itself in dealing with such matters. If the

commission refrains from upholding the carriers' efforts to get rid of one free service because it finds in existence another free service, without taking the steps necessary to strike both down as unlawful, the efforts of some railway officers to conform their practices to the requirements of the law will continue to be hampered by other officers who are willing to make the concessions necessary to obtain it. By constantly extending these free services to particular shippers in large communities, their cost becomes so great that relief is finally sought through an increase in the line-haul rates, which all shippers must pay, as was pointed out in the recent Five Per Cent Case (31 I. C. C., 351), where it was said that a substantial part of the increases had "been due to the increase in the special services performed for shippers at terminals and elsewhere without the imposition of any charge or for an inadequate charge."

"In the view I take of this case it presents a question of great public importance having two phases; one, the economic principle that our transportation costs should be placed where they properly belong, and the other a question of law, the right of a carrier performing a special service to make a charge for it. This right I regard as also a duty and the failure to perform it a violation of the act. And therefore in enforcing the integrity of the act it is the plain duty of this commission affirmatively to see to it that free services, of the special and private character involved on this record, are not performed by these servants of the public at the expense of the public." (34 I. C. C., 234.)

Carriers Must Furnish Tank Cars

Pennsylvania Paraffine Works v. Pennsylvania Railroad. Opinion by Commissioner Meyer:

The commission holds that it has the power to require carriers to furnish all necessary equipment, both ordinary and special, upon reasonable request. The question of what is a reasonably adequate car supply is an administrative one of which the commission alone can take original jurisdiction. A shipper's request for cars especially suited for the transportation of his products would not be reasonable if the cars must be prepared for shipment in a manner which is peculiarly within the technical knowledge of men connected with that industry, or if the movement of the commodity is a dangerous operation which can be safely performed only by men engaged in its production; but the shipment of petroleum products in tank cars does not call for such technical knowledge as would render unreasonable complainants' request that defendant furnish these cars. Tank cars are the only proper cars to use in the shipment of petroleum. The decision holds that all cars used by carriers, whether they be owned by the carriers themselves or leased from private car lines or from shippers, must be distributed without discrimination.

Commissioner Clark dissents, holding that the provision of section 1 of the act, that it shall be the duty of every carrier "to provide and furnish such transportation upon reasonable request therefor," did not enlarge the obligations or duties laid upon the carriers in this respect by the common law. There is no language in section 1 which indicates a legislative intent to expand the common-law duty of carriers to furnish facilities for transportation. If the act confers upon the commission power to order a carrier to enlarge its complement of cars and to award damages against it if it fails to comply with such order, it seems logically and necessarily to follow that the commission has the same power to order enlargement of terminal facilities, increase in the number of locomotives, and extension of tracks or branches. "I think that this power is vested in the courts and not in the commission." Commissioner Clements concurs in this dissent. Commissioner Harlan files a separate dissenting opinion wherein he says: "I concur in the general thought underlying the dissenting report herein of my brother Clark, namely, that the language in the act upon which the majority report is largely based is simply declaratory of the general duty of carriers at common law to furnish such cars and other facilities as are reasonably necessary to enable them to fulfill other public obligations, but does not impose upon this commission any such administrative duty or any such jurisdiction and power as are asserted in the majority report and in the order accompanying it." (34 I. C. C., 179.)

PERSONNEL OF COMMISSIONS

G. H. Byers, chief engineer of the Puget Sound & Willapa Harbor, at Raymond, Wash., has been appointed assistant engineer of the Pacific district of the Interstate Commerce Commission board of valuation engineers, with headquarters at San Francisco, Cal.

COURT NEWS

On the application of the Illinois Central and the Yazoo & Mississippi Valley, Judge Niles, of the United States district court, has issued a temporary injunction restraining the enforcement of the electric headlight law passed by the Mississippi legislature in 1912.

The United States Supreme Court has set aside a judgment of the supreme court of Pennsylvania giving the Clark Brothers Coal Mining Company a verdict for $124,443 against the Pennsylvania Railroad, representing triple damages for discrimination in car distribution. The United States Supreme Court held that the coal company, having applied to the Interstate Commerce Commission for redress and having obtained $31,000, could not now have recourse to the courts.

In the Federal Court at Jackson, Miss., June 15, a temporary injunction was granted restraining all district attorneys in Mississippi from prosecuting the Illinois Central and the Yazoo & Mississippi Valley for violating a headlight law passed by the legislature in 1912. The law stipulates that all locomotives operating on main lines in the state shall be equipped with high-power headlights. The case will be argued next month, when the roads will seek a permanent injunction.

In the United States District Court at Los Angeles, July 11, Judge Bean handed down a decision, in favor of the Government, in the suit against the Southern Pacific to recover 6,300 acres of land, alleged to contain oil, in Kern county, Cal., valued by the Government at over fifteen million dollars. Another suit, involving oil lands in the same region, of much greater value, is still pending. In the case now decided the Government charged that the affidavits produced by the railroad company to the effect that the land was not mineral but was agricultural, had been fraudulently obtained.

The Supreme Court of the United States, reversing the decision of the lower court, holds that the Adams Express Company was not violating the Webb-Kenyon law, regulating the transportation of liquor in interstate commerce, when it carried liquor into Kentucky for the personal use of the consignee. The destination of the liquor was in so-called dry territory; but the Kentucky Court of Appeals has held that the prohibition law of the state did not apply to liquor intended for the personal use of the consignee. In this case there was no evidence that the liquor was to be used otherwise.

Decision Against the Lackawanna in the Commodities Clause Case

The United States Supreme Court, in an opinion by Justice Lamar, has directed the government to bring new proceedings against the Delaware, Lackawanna & Western to stop the present plan by which the company sells coal through the Delaware, Lackawanna & Western Coal Company. This overrules the United States district court which had found in favor of the railroad. The full decision is not as yet available, but the following two paragraphs are taken from the New York Herald's report of the decision as handed down verbally:

"The railroad company, if it continues in the business of mining, must absolutely dissociate itself from the coal before the transportation begins. It cannot retain the title nor can it sell through an agent. It cannot call that agent a buyer while so hampering and restricting such alleged buyer as to make him a puppet subject to the control of the railroad company.

"If the railroad sells coal at the mouth of the mines to one buyer or to many it must not only part with all interest, direct or indirect, in the property, but also with all control over it or over those to whom the coal is sold at the mines. It must leave the buyer as free as any other buyer who pays for what he has bought. It should not sell to a corporation with officers and offices in common, for the policy statutes require that, instead of

being managed by the same officers, they should studiously and in good faith avoid anything either in contract or in conduct that remotely savors of joint action, joint interest or the dominance of one company by the other. If the seller wishes by a lawful and bona fide contract, whose provisions as to delivery and otherwise are not in restraint of trade, to sell all of its coal to one buying company, then that one buyer can be bound by reasonable terms and requirements to pay according to the contract. But such buyer should otherwise be absolutely free to extend the business to buy when, where and from whom he pleases, and otherwise to act as an independent dealer in active competition with the railroad company."

Discrimination Between Stations—Supplying Stock Scales Not Compulsory

The United States Supreme Court, in a case already briefly reported, holds unreasonable and arbitrary an order of the Minnesota Railroad & Warehouse Commission directing the Great Northern to erect within 45 days a six-ton scale in its stock yards at the village of Bertha, Todd county. This decision reverses that of the state supreme court (122 Minn., 55), which had affirmed the order on the ground that stock raisers who would otherwise market their stock at Bertha sometimes took it to Hewitt or Eagle Bend, a longer distance, in order to have the use of the scales installed at those places; that such scales tend to draw the stock business to and concentrate it at the places where they are located.

It appeared that six-ton scales installed by the railroad at 54 of its 259 stock-shipping stations in Minnesota were not used in transactions between carrier and shippers. The court sustained the railroad's contention that it should have had the opportunity of eliminating the discrimination between the stations by discontinuing the use of the scales at Eagle Bend and Hewitt. "The business of a railroad," the court said, "is transportation, and to supply the public with conveniences not connected therewith is no part of its ordinary duty. . . . It by no means follows, simply because a railroad voluntarily supplies a convenience at some stations which attracts trade, that it can be commanded positively to do likewise at other places along the line. A railroad's possessions are subject to its public duty, but beyond this and within charter limits, like other owners of private property, it may control its own affairs. Discontinuing the use of existing scales would abate the alleged discrimination and probably entail little, if any, outlay. The commission's order precluded use of this method to bring about lawful conditions and therein, we think, was plainly arbitrary and unreasonable." Decided June 14.

Employees' Liability Act—"Interstate Commerce"

A mechanic worked principally in running a machine where he shaped parts to be used in the repair of locomotives in immediate need of repair, and generally, but not exclusively, in the repair of locomotives used in interstate commerce. While engaged on a Sunday in moving the countershaft which supplied power to the shaping machine, his hand, while over the rail on a girder which he was drilling, was cut off by the wheels of a traveling crane moving on the girders. It was held by the New York Court of Appeals that he was not employed in interstate commerce and so could not recover in an action for his injury. The court distinguished Pedersen v. D. L. & W., 229 U. S., 146, 33 Sup. Ct. 648, where it was held that a person directly engaged in assembling material for the immediate repair of a bridge necessarily used in interstate commerce by a carrier is engaged in interstate commerce. From this holding, the court said, it does not follow that a person engaged at a shaping machine in a repair shop is engaged in interstate commerce; at least until it appears that the work he is doing is for the immediate repair of a locomotive or other instrumentality engaged in interstate commerce. Making parts to be used in a locomotive is a step further removed from commerce than the assembling of parts for the locomotive, and corresponds to the work of making bolts and rivets for use in bridge repairs. The plaintiff, in moving the countershaft, was doing millwork that in itself had no immediate or direct connection with commerce. Shanks v. D. L. & W. (N. Y.), 108 N. E., 644.

A car inspector was inspecting a train which ran on a division of an interstate road wholly within the state when he was struck and killed by another train of the same division. In an action under the federal employers' liability act there was no evidence that any passenger or baggage on either train was destined for a point in another state, though the time-tables of the company expressed a readiness to transport interstate passengers over that division and transfer them to interstate trains. The federal district court, E. D. Pennsylvania holds that there could be no recovery under the act. Boyle v. Pennsylvania, 221 Fed., 453.

The federal employers' liability act does not make an employer an insurer of the lives of its employees, and does not give a right of action unless negligence is shown. A conductor was caught between a doorpost of a freight house and the doors of a refrigerator car. The freight house had been used continuously for 15 years without injury to any employee. In an action for his injuries there was no evidence of faulty or unusual construction of the freight house. The Michigan Supreme Court held that the company was not negligent, under the act, for maintaining a defective place of work. The conductor was familiar with the surroundings and the manner of performing his duties, and knew of the nearness of the track to the doorpost. It was held that he assumed, as a matter of law, the risk of injury by being caught between a car and the doorpost. Miller v. Michigan Central (Mich.), 152 N. W., 235.

In an action for the death of a member of a shifting crew in the defendant's freight yard it appeared that the deceased handled both interstate and intrastate commerce, but at the time he met his death he was aiding in the movement of empty cars on a siding of a local private manufacturing company. The ultimate use to which the cars were to be devoted, and their ultimate destination when loaded was not shown. The deceased had been sent out as flagman. The character of the oncoming train which caused his death was not shown. The federal district court, E. D. Pennsylvania, held that he was not shown to have been engaged in interstate commerce so as to allow of recovery under the act. Shanley v. Philadelphia & Reading, 221 Fed., 1012.

Interstate Commerce in Intoxicating Liquor

The Adams Express Company was indicted for violation of the Kentucky statute by the delivery of intoxicating liquor from Tennessee to persons in Kentucky. The liquor was for the personal use of the buyers. The United States Supreme Court had this statute under consideration in Louisville & Nashville v. Cook Brewing Co., 223 U. S. 70, when the statute, as applied to interstate shipments, was held void as an attempt by the state to regulate commerce among the states. Such, the court says, must still be the fate of the statute, unless the Webb-Kenyon Act requires a different result. The Wilson Act did not prevent shipment of liquor in interstate commerce for the use of the consignee, provided he did not undertake to sell it in violation of the state laws. The court holds that the Webb-Kenyon Act does not prohibit all interstate shipment or transportation of liquor into so-called dry territory, but prohibits it only where the liquor is to be possessed, sold, or used in violation of the local law. The facts showed that the liquor was not to be used in violation of the state laws, therefore the Webb-Kenyon Act had no application. Judgment of conviction was reversed.—Adams Express Co. v. Kentucky (decided June 14).

Crossing Accidents—Care Required of Passengers in Vehicles

Action was brought for injuries to a passenger in a buggy, the wife of the driver, the buggy having been smashed into by a train at a crossing, in which the Circuit Court of Appeals, Sixth Circuit, held the plaintiff chargeable with contributory negligence barring recovery. It was held that where a driver and his passenger were both looking and listening for a train as they approached a crossing, the negligence of each while so engaged was the negligence of both. Where the plaintiff, as they approached the crossing, was looking out for her own safety and using her own eyes and ears for the purpose of determining whether trains were approaching, wholly independent of her husband, she was responsible for her own personal negligence in failing to see a train which might have been seen by exercising reasonble

care while looking. Although the doctrine that the negligence of the driver of a vehicle is imputable to his passenger has been generally discarded, it by no means follows that because a person is not controlling the vehicle, and because she is not responsible for the driver's negligence, she is not obliged to exercise due care for her own safety. Erie v. Hurlburt, C. C. A., 221 Fed. 907.

Plant Facility Subsequently Becoming Common Carrier is Bound by Published Rates

A railroad originally constructed as a plant facility in connection with ironworks was subsequently chartered as the Crane R. Co. under the Pennsylvania general railroad laws, which gave it a right of eminent domain. It was owned and operated by an independent company having track connection with other railroads and transporting freight for the public. Prior to the incorporation of the railroad the Central of New Jersey had an agreement with the ironworks, whereby the former paid to the ironworks 6 cents a ton on all cars hauled by the iron company to and from its works and other industrial establishments located along the line of the iron company's tracks to the Central of New Jersey's tracks. Following its incorporation the Crane company filed schedules of rates specifying a charge of $2 a car for all cars transported over its lines from and to connecting lines. In a suit to recover the difference between this rate and that stipulated in the agreement with the ironworks, the defense was that the Crane company was a plant facility of the ironworks and as such bound by the agreement. It was held, however, by the Pennsylvania Supreme Court, that the Crane company was a common carrier and not a mere plant facility. The court quoted the decision in the Tap Line Cases, 234 U. S. 1, 34 Sup. Ct., 741. The plaintiff, being engaged in interstate commerce and bound to accept shipments from the public, was required to file tariffs showing rates binding on all parties. Judgment for the plaintiff was affirmed.—Crane R. Co. v. Central of New Jersey (Pa.), 93 Atl., 1076.

Unexplained Boiler Explosion—Doctrine of Res Ipsa Loquitur

A locomotive engineer sued for injuries caused by the dislocation of a boiler flue, followed by an explosion and the throwing of hot water and steam upon him. The railroad company's contention was that, conceding that the plaintiff brought himself within the rule of *res ipsa loquitur* (the occurrence speaks for itself), the explanation offered by the company, and supported by two expert witnesses, without contradiction, was sufficient to overcome the presumption of negligence on the part of the company, and that it then became the duty of the plaintiff, as a condition of recovery, to establish the company's negligence.

There was evidence that the boiler at the time of the accident was carrying a steam pressure of 200 lb.; that it was just on the point of "popping"; and that at this time the engineer turned on the injector. It was the theory of the two experts that, the water being low in the boiler, the injection of cold water caused a contraction of the tube in question, drawing it away from the fastening at the end, and producing the leak which generated steam in the firebox, and forced off the doors of the furnace, producing the injuries complained of. This testimony was not disputed. The New York Appellate division, third department, holds, by a divided court, that this evidence supported a verdict for the plaintiff.

Justices Kellogg and Smith dissented, on the ground that the engineer had the control and management of the boiler, and the facts showed that the cause of the explosion was either a defect in the boiler itself or the improper management of it by the engineer. If a bystander, or an employee, having nothing to do with the boiler, had been injured by the explosion, the doctrine of *res ipsa loquitur* would have applied and indicated the company's negligence, for it would be equally responsible for either cause. But here the circumstances unexplained might point as directly to the negligence of the engineer as to a defect in the boiler. Therefore the engineer gained no advantage from the doctrine, except perhaps by confining the proof in the first instance to the allegation that he was not negligent, and therefore the boiler must have been defective. In order, therefore, to prove negligence of the company, it was necessary for the engineer to establish that the boiler was defective; in other words, that his conduct did not cause the explosion. Francey v. Rutland, 153 N. Y. Supp., 151.

Railway Officers

Executive, Financial, Legal and Accounting

Arthur S. Piers, real estate agent of the Canadian Pacific at Montreal, Que., has been appointed manager real estate department, with office at Montreal, in charge of the company's real estate and buildings not used exclusively for railway purposes, or administered by the general executive assistant at Vancouver, and the department of natural resources.

Edward A. Haid, whose appointment as general attorney of the St. Louis Southwestern, with headquarters at St. Louis, Mo., has already been announced in these columns, was born on November 4, 1881, in St. Louis, Mo., and graduated from the grammar schools of that city. He was graduated from the Benton (night) school of law in June, 1904, and entered the general practice of law on January 1, 1905. He left the general practice of law on February 4, 1907, to become chief clerk in the law department of the St. Louis & San Francisco. On December 1, 1912, he was appointed assistant general attorney of the St. Louis Southwestern at St. Louis, Mo., which position he held at the time of his recent appointment as general attorney of the same road, with headquarters at St. Louis, as above noted.

Edward A. Haid

Operating

J. A. Baldwin, acting superintendent of the Nashville, Chattanooga & St. Louis, at Atlanta, Ga., has been appointed superintendent of the Western & Atlantic division, with headquarters at Atlanta.

Edward E. Taylor, trainmaster of the Gulf, Colorado & Santa Fe, at Galveston, Tex., has been appointed division superintendent, with headquarters at Cleburne, Tex., succeeding Oliver Snyder, deceased. D. W. Nettleton, chief train despatcher at Temple, Tex., has been appointed trainmaster at Galveston, Tex., succeeding Mr. Taylor. H. S. Taylor succeeds Mr. Nettleton as chief train despatcher at Temple, Tex.

George W. Kirtley, whose appointment as general superintendent of transportation of the Erie, with headquarters at New York City, has already been announced in these columns, was born at Panora, Iowa, and was educated in the public and high schools of his native town. He began railway work in 1897, as a clerk in the office of the district passenger agent of the Northern Pacific at Des Moines, Iowa. From 1898, to 1900, he served as clerk in the office of the general passenger agent of the same road at St. Paul, Minn., and then to 1901, as clerk in the office of the general superintendent of the Chicago, St. Paul, Minneapolis & Omaha at St. Paul. He was then to 1902, secretary to the general superintendent of the Baltimore & Ohio, at Chicago. From 1902, to 1903, he was secretary to the general superintendent of transportation of the same road, and in 1903 entered the service of the Erie as chief clerk to the general superintendent at Cleveland, Ohio. In 1904, he was appointed assistant superintendent of transportation at New York City, remaining in that position until 1908, when he became superintendent of car service at the same place. Two years later he was appointed superintendent of transportation, which po-

sition he held at the time of his recent appointment as general superintendent of transportation of the same road as above noted.

Traffic

F. W. Whipper has been appointed assistant general passenger agent of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cincinnati, Ohio, succeeding D. M. Bowman, promoted.

George Merki has been appointed chief inspector of the joint rate inspection bureau and the weighing and inspection bureau of the Central Freight Association, with headquarters in the Transportation building, Chicago, succeeding Paul P. Rainer, deceased.

Engineering and Rolling Stock

L. A. Hardin, general foreman of the Chicago & North Western at Boone, Iowa, has been appointed assistant master mechanic at South Pekin, Ill.

R. H. Howard, formerly general manager of the New Orleans & Great Northern, has been appointed chief engineer of maintenance of way of the Wabash, with headquarters at St. Louis, Mo.

E. B. De Vilbis, electrical engineer of the Pennsylvania Lines West, at Fort Wayne, Ind., has been appointed assistant engineer of motive power, with office at Toledo, Ohio, and W. E. Stockbridge, motive power inspector at Fort Wayne, Ind., has been appointed electrical engineer, succeeding Mr. De Vilbis.

OBITUARY

J. E. Gimperling, Sr., formerly superintendent of the Cincinnati, Dayton & Ironton and the Cincinnati, Dayton & Chicago, died at Dayton, Ohio, on June 14, at the age of 84 years.

M. E. Sherwood, division master mechanic of the Michigan Central, at Jackson, Mich., was accidentally shot and killed at that place on June 4. His age was 46 years.

William L. Breyfogle, formerly president of the Louisville, New Albany & Chicago, now the Chicago, Indianapolis & Louisville, and later president of the Bedford Belt Railway, died at Hillsborough, a suburb of San Francisco, Cal., on June 17, at the age of 68 years.

INDIAN RAILWAY NOTES.—The Balasand bridge on the Kissengunge line of the Darjeeling-Himalayan Railway has recently been completed. It has 14 spans of 40 ft. each and is a fine piece of engineering work. The Mahananda bridge on the same line cannot be completed at present, as the war has interfered with the delivery of girders. It is now proposed to get over the difficulty by constructing a temporary floating bridge. The Kissengunge-Matigora section, 62 miles long, has been opened for traffic; it is of narrow gage, runs from Siliguri via Nuzalbaree, thence along the boundary of Nepal and opens up a rich tract of the country.

THE PRIESKA-UPINGTON RAILWAY OF SOUTH AFRICA.—The electric light was brought into requisition and played an important part in the construction of the Prieska-Upington Railway, South Africa; the track of 142 miles was laid in record time, the average rate being equal to 2.25 miles per day. The maximum mileage completed in any one day was 3.25 miles. When once the work was properly set going it was carried on day and night, an up-to-date electric light generating plant enabling operations to be continued after sunset. This plant, which was headed by two powerful searchlights, travelled along the line as the rails were laid, driven by a locomotive, and carrying everything necessary for the generating of electricity. The lights were arranged on a long arm, which could be, and was, under perfect control, so that the light could be thrown in almost any direction within the half-radius of a circle. The speedy construction of the line was considered necessary in order to facilitate the movement of troops towards the German southwest border. The line is now being extended beyond Upington, and it is possible that the record established in the laying of the Prieska-Upington section may be eclipsed.

Equipment and Supplies

LOCOMOTIVE BUILDING

THE INTERCOLONIAL is inquiring for 20 locomotives.

THE BULGARIAN STATE RAILWAYS are in the market for 10 locomotives.

THE CUMBERLAND & MANCHESTER is contemplating the purchase of a locomotive.

THE BELGIAN STATE RAILWAYS have ordered 20 locomotives from the American Locomotive Company.

THE VERDE TUNNEL & SMELTER RAILROAD has ordered one superheater six-wheel switching locomotive from the American Locomotive Company. This locomotive is to have 21 by 26-in. cylinders and 58-in. driving wheels.

THE CENTRAL RAILWAY OF BRAZIL has ordered 3 Pacific and 3 Consolidation type locomotives from the American Locomotive Company. The Pacific type locomotives will have 21½ by 28-in. cylinders, and 68-in. driving wheels; and the Consolidation type locomotives will have 22 by 24-in. cylinders and 50½-in. driving wheels.

THE RUSSIAN GOVERNMENT which, as reported in the *Railway Age Gazette* of last week, has ordered 250 locomotives from the Baldwin Locomotive Works, 100 from the American Locomotive Company, and 50 from the Canadian Locomotive Company, is also understood to have ordered 50 locomotives from the Lima Locomotive Corporation. The locomotives ordered from the Baldwin Locomotive Works are to be Decapod type locomotives for freight service. Those ordered of the American Locomotive Company are to be of the same type and are to have 25 by 28-in. cylinders, 52-in. driving wheels, and a total weight of 197,000 lb. The Baldwin Locomotive Works is also reported to have received an order for 365 traction engines from the Russian government.

CAR BUILDING

THE SEABOARD AIR LINE is inquiring for 4 dining cars.

THE INTERCOLONIAL is in the market for 1,000 steel underframe box cars.

THE CUMBERLAND & MANCHESTER intends to purchase a number of flat cars.

THE CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA is inquiring for 1,500 40-ton box cars.

THE CHICAGO & NORTH WESTERN has revived inquiries for 1,500 steel underframe box cars.

THE LAKE SUPERIOR & ISHPEMING has ordered 400 ore cars from the Cambria Steel Company.

THE CHILE EXPLORATION COMPANY, South Bethlehem, Pa., has ordered 40 ore cars from the Pressed Steel Car Company.

THE NEW YORK CENTRAL is said to be contemplating the purchase of a large number of freight cars. This item has not been confirmed.

THE CINCINNATI, HAMILTON & DAYTON has revived an inquiry for 1,000 40-ft. 40-ton steel underframe box cars and 1,000 50-ton hopper cars.

THE RUSSIAN GOVERNMENT is reported to have ordered 57,400 car wheels on axles from the Baldwin Locomotive Works for delivery within 90 days.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 2,500 40-ft. 40-ton box cars from the Pullman Company, 1,000 from the Bettendorf Company and 500 from the Haskell & Barker Car Company.

THE PENNSYLVANIA EQUIPMENT COMPANY, Philadelphia, Pa., is in the market for 100 80,000 to 100,000-lb. capacity all steel or

steel underframe gondola cars, 1 or 2 60,000 to 70,000-lb. capacity box cars and a number of second-hand 3-ft. gage coal and flat cars.

THE BRITISH GOVERNMENT is reported to have given the Canadian Car & Foundry Company a large order for box cars. This item has not been confirmed, and may possibly have been confused with the order which this company is supposed to have received from France.

THE FRENCH GOVERNMENT is reported to have ordered 2,500 cars from the Standard Steel Car Company, and 1,000 from the Canadian Car & Foundry Company. The total order includes 10 and 20-ton flat and box cars. The French government is also said to be in the market for 345 passenger cars.

IRON AND STEEL

THE CHESAPEAKE & OHIO is negotiating for additional rails.

THE CUBA RAILROAD has ordered 7,000 tons of rails from the Lackawanna Steel Company.

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered 516 tons of steel for through girder spans from the Wisconsin Bridge & Iron Company.

THE PADUCAH & ILLINOIS has ordered 540 tons of steel for trusses and frames for the Metropolis bridge, at Metropolis, Ill., from the Kenwood Bridge Company.

THE SOUTHERN RAILWAY has ordered 2,100 tons of rail from the Tennessee Coal, Iron & Railroad Company, and 6,000 tons from the Pennsylvania Steel Company.

THE NEW YORK CENTRAL has ordered 1,500 tons of rails from the Illinois Steel Company in addition to the 15,500 tons reported in the *Railway Age Gazette* of May 28.

THE TRANS-MISSISSIPPI TERMINAL RAILWAY has ordered 209 tons of steel for a passenger station and terminal buildings, at New Orleans, La., from the Virginia Bridge & Iron Company.

THE ST. LOUIS & SAN FRANCISCO has ordered 21,212 tons of 90-lb. open hearth rails from the Tennessee Coal, Iron & Railroad Company, and has also placed an order for 205 tons of steel for four 77-ft. deck plate girder spans with the American Bridge Company.

THE PENNSYLVANIA LINES EAST & WEST OF PITTSBURGH, which were reported in the *Railway Age Gazette* of June 11, as having ordered 155,500 tons of rail, divided the order as follows: 69,700 tons from the Carnegie Steel Company, 34,850 tons from the Cambria Steel Company, 34,850 tons from the Pennsylvania Steel Company and 8,050 tons each from the Bethlehem Steel Company and the Lackawanna Steel Company.

MACHINERY AND TOOLS

THE NEW YORK CENTRAL is inquiring for a number of machine tools.

THE PENNSYLVANIA RAILROAD is in the market for a few machine tools.

THE INTERBOROUGH RAPID TRANSIT is said to be contemplating the purchase of machine tools.

THE BALTIMORE & OHIO is said to be contemplating the purchase of a large number of machine tools.

THE MAINE CENTRAL has ordered one 35-ton crane from the Northern Engineering Works, Detroit, Mich.

THE LEHIGH VALLEY has ordered a 72-ft., 233-ton electrically operated locomotive transfer table and an electric tractor for a 100-ft. turntable from George P. Nichols & Brother, Chicago, for installation at Sayre, Pa.

RAILROAD CONSTRUCTION PROJECTS IN SWITZERLAND.—Altogether 78 railway projects exist in Switzerland for which concessions have already been granted, besides a great many others which have not yet reached the stage of having a formal demand made for a concession. These 78 railway projects, for which concessions have been obtained, will for the most part probably never be carried out, at any rate, not for 15 or 20 years to come.

Supply Trade News

A. S. Baldwin has been appointed works manager of the R. D. Nuttall Co., Pittsburgh, Pa.

Frederick C. Lavarack of the Signal Accessories Company, will also represent the sales department of the Hayes Track Appliance Company in New York city and the east.

F. W. McIntyre, for the past four years connected with the Chicago office of the Niles-Bement-Pond Company, has been transferred to the Boston office, where he was formerly located.

The American Locomotive Company and the Westinghouse Air Brake Company have received permission to manufacture munitions of war in the former plant of the Texoleum Company at Kenilworth, N. J.

The American Locomotive Company is said to be planning to establish a branch plant in Cincinnati for the filling of war orders. According to the reports, if a suitable plant cannot be rented a new one will be erected.

Ira C. Rogers has resigned from the position of assistant purchasing agent of the Pittsburgh & Lake Erie, and has been appointed general purchasing agent of the International Steam Pump Company, New York.

The transportation department of the Panama-Pacific International Exposition at San Francisco has awarded the Rail Joint Company, New York, the only medal of honor presented for rail joint products.

At a meeting of the board of directors of Berry Brothers, Detroit, Mich., held on May 26, Orrin S. Goan was elected president and a director succeeding Frank W. Blair, who has resigned because of other business interests.

The Safety Car Heating & Lighting Company, New York, has been awarded a gold medal by the International Jury of Awards at the Panama Pacific International Exposition for its "Underframe" car lighting electric equipment.

M. A. Hudson has resigned as vice-president of the J. E. Lonergan Co., Philadelphia, Pa., to become manager of the western branch of the United Roofing & Manufacturing Company, with headquarters at 933 Marquette building, Chicago.

The Public Belt Railway Commission of New Orleans has just ordered from the Weir Frog Company of Cincinnati, 175 sets of manganese insert frogs, guard rails and switches. This order is for the full normal requirements of the Commission.

A three-story, 80-ft. by 600-ft addition is to be made to the boiler shop of the Eddystone, Pa., plant of the Baldwin Locomotive Works. The new shop is to be a woodworking shop, and it is said will be used in the manufacture of rifle stocks.

R. M. Newbold, formerly with the Adams & Westlake Company, has been appointed western manager of the railroad department of the Willard Storage Battery Company, succeeding P. D. Smith, who has resigned to accept service with another company.

The Kincaid Stoker Company, Cincinnati, Ohio, has been incorporated, with $50,000 capital stock, to manufacture mechanical stokers for use on locomotives, ships and in power plants. John Kincaid, Napoleon DuBrul, D. S. DuBrul and Clarence DuBrul, are the incorporators.

W. C. Irwin, formerly connected with the engineering department of the city of St. Louis, has been appointed district representative of the Kalamazoo Railway Supply Company, in charge of the St. Louis office at 304 Frisco building, succeeding W. D. Waugh, resigned.

The Harvey Company, 113 South street, Baltimore, Md., has recently been incorporated under the laws of Maryland to sell equipment and supplies to railroads, contractors, shop and engine building companies, etc. J. Edward Harvey, who has been elected president of the new company, was formerly vice-presi-

dent of the South Baltimore Steel Car & Foundry Company, Baltimore, Md., and at one time proprietor of the Eastern Railway Supply Company.

Richard S. Brown, formerly a salesman of railway apparatus, connected with the Boston office of the Westinghouse Electric & Manufacturing Company, died in New York June 5. Mr. Brown was 76 years of age and had been in the service of the Westinghouse company since 1890.

The American Car & Foundry Company will spend more than $50,000 in improvements to its Milton, Pa., plant. Included are new shops, 100 by 350 ft. in size, a 120-ft. extension to the steel storage yard, a 100-ft. extension to the tank car plant and the addition of some machinery.

Harrison G. Thompson, a vice-president, and manager of the railway department of the Edison Storage Battery Company, Orange, N. J., has been appointed general sales manager, and as such will henceforth have charge of all sales including the railway, house lighting and commercial departments.

H. C. Crawford, eastern traffic manager of the Cambria Steel Company at Philadelphia, has been appointed traffic manager of that company, succeeding William A. Sproul, who has resigned, effective August 1, after 25 years of service with the company, to take charge of the bureau of transportation and traffic of the Philadelphia Chamber of Commerce.

David A. Thomas, the well-known Welsh coal mine owner, has been appointed to represent the munition department of Great Britain in the United States and Canada. He will probably make his headquarters in Ottawa and New York, and will deal directly with makers of arms and munitions, co-operating in so far as possible with J. P. Morgan & Co.

The Chambers Valve Company, New York, announces that among other recent orders it has received orders for Chambers throttle valves for installation on 42 locomotives of the Missouri, Kansas & Texas, 55 of the Chicago, Burlington & Quincy, 15 of the Western Maryland, 12 of the New York, Ontario & Western, and 2 of the El Paso & Southwestern.

The Chicago Great Western has ordered 1,150 sticks of treated piling from the Central Coal & Coke Company, 400,000 ft. of long leaf pine from the Bell Lumber Company, 850,000 ft. of untreated Douglas fir from Washington points and 350,000 ft. of yellow pine from Louisiana points. All the timber will be treated by the International Creosoting & Construction Company, at Texarkana, Tex.

The Hagar Portland Cement Company has been incorporated under the laws of Maine, with $20,000,000 capital stock, for the purpose of acquiring and operating a chain of cement plants between the Atlantic coast and the Rocky mountains. Edward M. Hagar, recently president of the Universal Portland Cement Company, was elected president; Morris Metcalfe, vice-president; B. H. Rader, vice-president and sales manager; Gordon Wilson, secretary and in charge of cost accounting; Leonard Wesson, assistant to president in operation and construction; J. P. Beck, assistant to president in extension work; C. W. Lyon, engineer of economies, and J. H. Barbazette, superintendent of construction. Pending the election of a permanent treasurer the office will be filled by Gordon Wilson. The general offices of the company are located at 208 South La Salle street, Chicago.

The Ingersoll-Rand Company, New York, on June 1 opened a new branch office at 139 Townsend street, San Francisco, Cal., with a view to giving closer attention to the needs of present and prospective users of Ingersoll-Rand machinery. H. L. Terwilliger, president of Harron, Rickard & McCone, the present Ingersoll-Rand agents, has resigned from that position to become district manager of the territory handled by the Ingersoll-Rand Company's San Francisco and Los Angeles offices, with headquarters in the former city. H. G. Mitchell, formerly secretary of Harron, Rickard & McCone, has been elected president of that company, succeeding Mr. Terwilliger, and arrangements have been made whereby the company will continue to handle Ingersoll-Rand machinery and co-operate in other ways with the Ingersoll-Rand Company after the expiration of the agency contract on July 22.

Railway Construction

ATHABASCA & FORT VERMILLION.—Announcement is made that surveys are to be started at once preliminary to actual construction of the line from Athabasca, Alta., northwesterly to Trout Lake and to Fort Vermillion, about 300 miles. J. M. Kernan, J. V. Rawle, J. Dalganeau, Athabasca; S. Clarke, Fort Vermillion, and K. Keith, Edmonton; D. A. Thomas, and A. G. McKay are interested. (April 23, p. 913.)

CUMBERLAND & MANCHESTER.—A contract has been given to T. J. Vermillion & Son, Barbourville, Ky., for grading and track laying on a section of three miles, and additional contracts are to be let shortly. The plans call for building from Barbourville, in Knox county, Ky., north via Cannon, Girdler, Hopper and Woollum to Manchester, 24 miles. An extension from Manchester is projected to Beattyville, about 30 miles, but this extension will not be built at the present time. The maximum grades to Manchester will be about 1 per cent, and the maximum curvature 8 deg. There will be four steel bridges on the line. The company expects to develop a traffic in lumber, coal, livestock, farm products and salt. Charles F. Heidrick, president, Brooksville, Pa. (June 4, p. 1181.)

CUMBERLAND RAILROAD.—An officer writes regarding the reports that construction work would be resumed soon on an extension from Wheeler, Ky., southwest to Jellico, Tenn., about 24 miles, that it has not yet been definitely decided when construction work on this line will be resumed. The company now operates a line from Artemus, Ky., south to Wheeler, 10.2 miles.

EASTON & WASHINGTON TRACTION.—This company, operating an electric line, from Easton, Pa., east via Washington, N. J., to Port Murray, has decided to build an extension northeast via Hackettstown to Lake Hopatcong, 19 miles.

MASCOT & WESTERN.—Track laying was finished recently, it is said, on this line from the Mascot Copper Company's property in Cochise county, Ariz., to the main line of the Southern Pacific. T. N. McCauley, president, Chicago; C. S. Henning, chief engineer, Dos Cabezos, Ariz. (February 19, p. 350.)

MISSOURI, KANSAS & TEXAS.—This company is reducing grades on 3.1 miles of its line between Canadian and Eufaula, Okla., and is extending its bridge over the Canadian river at that point, as was reported in the *Railway Age Gazette*, May 21. The general contract has been awarded to the List & Gifford Construction Company, Kansas City, Mo., and the steel contract for the bridge to the Wisconsin Bridge & Iron Company. The work is now in progress.

NASHVILLE, SPRINGFIELD & NORTHERN.—Incorporated in Tennessee to build a railway from Nashville, Tenn., connecting Springfield, Clarksville and Franklin, Ky., about 80 miles. E. G. Stribling, president, Nashville; W. B. Myers, vice-president, Goodlettsville, and R. C. Leonard, secretary and treasurer, Nashville.

NEW YORK SUBWAYS.—The New York Public Service Commission, First district, has awarded the contract for the construction of Section No. 1 of Route No. 29, the Nostrand avenue subway in the borough of Brooklyn, to the Newman & Carey Company, Brooklyn, the lowest bidder, who offered to do the work for $2,073,303. Section No. 1 covers that part of the line extending from Eastern Parkway southward under Nostrand avenue to a point about 220 ft. south of Church avenue.

PEOPLES RAILROAD COMPANY.—Plans are being made by this company, which now operates a one-mile line at Fairhope, Ala., it is said, to build an extension east to Robertsdale, about 14 miles. The headquarters of the company are at Fairhope.

WHITE SULPHUR & HUNTERSVILLE.—This company plans to build a line from White Sulphur, W. Va., northeast via Montague, Mapledale, Divide, Alvon and Shryock to a point 27 miles from White Sulphur, with a branch from a point near Shryock to Neola. The company expects to develop a traffic in lumber, but has not yet decided when the construction work will be carried out. T. J. Shryock, president, Baltimore, Md.

Yazoo & Southern.—Organized in Chicago with $3,000,000 capital to build a railroad from Yazoo City, Miss., east to Carthage, about 60 miles. W. C. Murphy, Yazoo City, P. R. McDonough and W. Kissock, Chicago, are the projectors and directors, and G. U. Nichols and S. Murphy, Chicago, are directors. (See Mississippi Roads, May 14, p. 1033.)

RAILWAY STRUCTURES

Baltimore, Md.—The Pennsylvania Railroad will ask for bids soon for installing some of the new coal handling facilities to be provided at Canton, Baltimore, which are expected to increase the tonnage of coal exported through Baltimore. The improvements to be carried out at Canton include a concrete bulkhead pier, machinery for loading coal into vessels, a coal dumper, thawing house and extensive freight yards for loaded and empty cars. The new pier is to be 942 ft. long and 66 ft. wide, and the coal handling machinery on the new pier will be capable of loading at least 6,000 tons of coal in ten hours. The thawing house will have a capacity of 30 cars, and there will be a tributary yard with a capacity of 79 cars. The loaded car yard is to have 36 tracks with a capacity of 620 cars, and the empty car yard is to have a capacity of 139 cars, with shop car tracks to hold 28 cars additional.

Bessemer, Ala.—The Alabama Great Southern will at once build a new station at Twentieth street, Bessemer, to cost $30,000. The building is to be of brick construction with Spanish tile roof, and cement floors. The company's forces will carry out much of the construction work. (May 28, p. 1140.)

Fredericton, N. B.—According to press reports, the Intercolonial has under consideration the question of building a new superstructure on the bridge over the St. John river at Fredericton.

Kinnickinnick, Wis.—The Chicago & North Western has awarded the contract for the pile foundation of its elevator at this place, to the Walsh Construction Company, Davenport, Iowa.

New York.—The War Department has granted permission for the construction of a bridge over the Bronx river at Westchester avenue in the borough of the Bronx. The bridge is to be built to carry the tracks of the Pelham Bay Park branch of the Lexington avenue subway, which at this point runs on an elevated structure. The plans call for a permanent bridge with a clearance of 61 ft. above mean high water.

Ottawa, Ont.—Bids are wanted until June 25, by J. W. Pugsley, secretary, Department of Railways and Canals, Ottawa, it is said, for improvements on the main line of the Intercolonial Railway as follows: Construction of abutments and piers at St. Henri river bridge, Riviere du Loup subdivision, and subways at Little Metis, Campbellton subdivision, and at Hampton, St. John subdivision.

Spartanburg, S. C.—The Southern Railway is asking for bids for work on a modern freight terminal, to include separate inbound and outbound warehouses with ample team track facilities at Spartanburg. The work is to be started at once, and the improvements will cost about $100,000. The new facilities will consist of a one story inbound freight house, 40 ft. by 198 ft., with a two story office section 40 ft. by 52 ft., to be of brick construction with concrete floor, fireproof roof, and equipped with rolling steel doors; the outbound freight house will be a one story structure 22 ft. by 250 ft., with concrete floor and base, frame construction and fireproof roof. There are to be four house tracks, with a capacity of 32 cars, and four team tracks with a capacity of 29 cars. A 20-ton Pillar crane will also be provided for handling heavy freight.

The Dalles, Ore.—The Oregon-Washington Railroad & Navigation Company will build a 12-stall roundhouse, a 40-ft. by 60-ft. storehouse, a 30-ft. by 40-ft. powerhouse, and a 50-ft. by 60-ft. machine shop. The powerhouse, machine shop and roundhouse will be brick buildings with mill interior, and the storehouse will be a corrugated, galvanized building on wood frame.

Bagdad Railway.—A Constantinople telegram states that 40 miles of the Bagdad Railway from Tellebiad to Tuan east of the River Euphrates have been opened to traffic.

Railway Financial News

Chesapeake & Ohio.—The following statement was issued by the board of directors on June 17:

"The board of directors at a meeting today decided not to declare at this time any dividend upon the stock of the company. While the gross earnings are the largest in its history, there has been a marked change in the character and direction of traffic carried, entailing a large decrease from hire of equipment and larger payments to other lines. The surplus for the year has also been unfavorably affected by decreased income from the Hocking Valley Railroad Company and the Kanawha & Michigan stocks.

"Advance figures indicate that earnings on the stock for the current fiscal year will be equivalent to about 4 per cent. A dividend of 1 per cent was paid on December 31, 1914, and the remainder has been devoted to improvements, payments on equipment, etc., thus enhancing the value of the property represented by the stock, thereby also complying with the terms of the note agreement of March 16, 1914.

"The $4,029,200 realized from the sale of the Kanawha & Michigan Railway stock was deposited with the trustee of the company's first lien and improvement mortgage, to be expended for improvements or investments which are permitted under the terms of that mortgage. The directors concluded that the very best use to which this special fund can be put, particularly at a time of low cost, is to invest it in the construction of a line nearly 30 miles in length, crossing the Ohio river east of Portsmouth, Ohio, and have accordingly authorized contracts for the bridge and for the line referred to. This line is to connect with the Norfolk & Western at Waverly, Ohio, from which point trackage rights have been arranged with the Norfolk & Western to a connection with the Hocking Valley near Columbus, Ohio.

"It is expected that this construction, which it is hoped may be completed by November 1, 1916, will not only restore to the Hocking Valley line a coal tonnage equivalent to that formerly received from the Kanawha & Michigan, but that it will also furnish a greatly needed additional outlet for coal originating on the Chesapeake & Ohio lines destined for the lakes and the northwest and will facilitate the significant development of coal lands in the territory served by the company.

"Such a connection is unqualifiedly considered the one important thing to be done for the Chesapeake & Ohio and will place it in a more commanding position than ever before, because it will have a short line from eastern Kentucky and a large part of West Virginia to Lake Erie. It is estimated that the cost of this new construction, including the Ohio river bridge, will not exceed $4,500,000. The present outlook for business is excellent."

Chicago, Rock Island & Pacific.—Judge Carpenter, in the federal court, has approved the issue of equipment trust certificates to pay for 85 per cent of the cost of 4,000 box cars, and has approved the payment of the remaining 15 per cent in cash by the reecivers. The court has also approved the payment of $125,000 due to the Trinity & Brazos Valley. The Rock Island and the Colorado & Southern use the Trinity & Brazos Valley jointly from Dallas, Tex., to Houston, and the $125,000 represents the semi-annual payment of the Rock Island's share of the lease.

Colorado & Southern.—See Chicago, Rock Island & Pacific.

Missouri Pacific.—Brown Brothers & Company, New York, are asking holders of the collateral trust 5 per cent bonds due 1917 and the collateral trust 5 per cent bonds due 1920 of the Missouri Pacific to communicate with them, giving their addresses and holdings, with a view to concerted action for the protection of their interests in the plan which is now under discussion for a reorganization of the Missouri Pacific finances.

Brown Brothers & Company are also asking holders of the St. Louis, Iron Mountain & Southern refunding 4 per cent bonds to send their names and holdings to the firm.